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ABSTRACT

The eight popular commercial reading programs examined in this study were selected on the basis of their use with compensatory education students and the fact that they represent different instructional approaches. The study examined how readers are taught to break the letter/sound code, what correspondences are taught, and how correspondences are sequenced and taught in each program. The methodology found in the code-emphasis programs was judged to be appropriate for compensatory education students. The phonics instruction offered by the four basal programs, however, is inappropriate for compensatory readers, since it assumes a sophisticated phonemic analysis ability. The study concludes that the ability to read new words is enhanced by direct letter-sound training rather than by whole word training. A direct instruction model is recommended, containing the following: direct instruction in letter-sound correspondence making these relationships obvious to students, a definite instructional strategy for teaching blending, and repeated opportunities to apply learned correspondences and blendings to the reading of words in connected text. Facility in word recognition is developed through repeated exposure to the same words in different texts. (Tables and references are included.) (DF)

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AN ANALYSIS OF DIMENSIONS THAT AFFECT THE DEVELOPMENT OF CODE-BREAKING ABILITY IN EIGHT BEGINNING READING PROGRAMS

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Background and Introduction

It is well documented that reading programs designed and developed by commercial publishing companies are the major instructional resources used to teach reading in the elementary school (Austin & Morrison, 1963; Corder, 1971). These programs are more than series of graded storybooks, they provide total instructional systems. They supply a pedagogy for teaching reading (through the teacher's manuals), selections for children to read (through the students' readers), and practice exercises (through the workbooks). Although the implementation of programs undoubtedly varies with individual teachers, there is strong evidence that the particular program a teacher uses heavily influences his/her classroom teaching behavior (Diederich, 1973a). Hence, the type of reading instruction encountered by students in a particular classroom is shaped to a great degree by the reading program being used in that classroom.

Prior to 1950, prevailing practice in beginning reading instruction was dominated by programs employing the whole-word approach.[1] Proponents of the whole-word teaching methods argued that "the process of reading should be defined broadly to include as major goals, right from the start, not only word recognition, but also comprehension and interpretation, appreciation, and application of what is read to the study of personal and social problems" (Chall, 1967, p. 13). In other words, they argued that even very young children who were first learning to read should engage in all of the sophisticated skills of adult readers.

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[1]It will facilitate our discussion for the reader to be aware of the sense in which we will be using terms associated with beginning reading instruction. The terms "basal reader," "whole-word approach," and "meaning-emphasis approach" will be used synonymously. This method emphasizes, from the beginning of instruction, meaningful reading of whole words, sentences, and stories geared to children's own experiences and interests. Please note that the "basal reader" term is used in the conventional sense of basal readers as they were marketed in the 1950's. It is possible to have a basal reader on the market today that no longer employs this approach; Lippincott is an example. But in this paper, the term "basal reader" implies a whole-word, meaning-emphasis approach.

In contrast to this approach is a general method variously called the "code-emphasis" or "code-breaking" method. This method emphasizes the regularities of the print-to-sound code within words (the smallest units of which are called letter/sound or grapheme/phoneme regularities).

In this paper, "decoding" is the translation of print to speech (overt or covert), with meaning implicit in the translation. Both of the major approaches, the whole-word and the code-breaking, believe decoding to be important in beginning reading. We have, however, labeled two subdivisions of decoding: "word attack" and "word recognition." We will use the phrase "word attack" to represent that aspect of decoding where the learner brings into action (either overtly or covertly) implicit of explicit "rules" of pronunciation to unlock the pronunciation of a word. The term "word recognition" will be used to describe that aspect of decoding where the learner recognizes words instantly. Both word attack and word recognition are decoding. Phonics are instructional methods that teach procedures for word attack.

Sight words are words that are taught as whole units, without analysis of their parts. Both meaning-emphasis and code-emphasis programs can introduce sight words.

The first challenge to the whole-word approach came from linguists who were concerned that the structural relationships between written and spoken language were not being maximized. Reviving a concept introduced by Bloomfield in the 1930's, linguists in the 1950's argued that the basal readers, whose vocabulary was not chosen to display the regularity of the written code, made the task of learning to read unnecessarily difficult. They urged beginning reading maximizing the regularities of print-to-sound mapping.

In 1955, Rudolph Flesch's book, Why Johnny Can't Read, became a best seller. In it, he attacked vehemently the whole-word approach and demanded a return to a phonic approach. While the general public and press reacted favorably to Flesch's argument, because it was just that, a propagandistic argument as opposed to a careful study, it was rejected by reviewers in educational journals.

It was in this context that Jeanne Chall in 1962 began her landmark study. In her study, Chall critically analyzed existing research that compared different approaches to beginning reading. She pulled together correlational studies of beginning reading achievement. She investigated the relationship between the extent and kinds of reading failures children experience and the methods used to instruct these children in the initial stages of reading. In addition, she interviewed the leading proponents of the various methods and observed these methods in use in schools. The result was a well-organized and insightful interpretation of a massive amount of data.

In Chall's words, her conclusions were:

> My review of the research from the laboratory, the classroom, and the clinic points to the need for a correction in beginning reading instruction methods...the research from 1912 to 1965 indicates that a code-emphasis method--i.e., one that views beginning reading as essentially different from mature reading and emphasizes learning of the printed code for the spoken language--produces better results, at least up to the point where sufficient evidence seems to be available, the end of the third grade (1967, p. 307).

Later, in 1973, Paul Diederich, interpreting the findings of the 1971 Corder Report, stated that "one of the few conclusions of reading research in which we can have a high degree of confidence is that earlier and more systematic instruction in phonics is essential" (1973b, p.7).

Recently, in an effort to identify the characteristics of successful programs, the National Institute of Education (NIE) funded a survey of the data from the following reports on successful programs: American Institute for Research (Bowers, Campeau, Roberts, & Oscar, 1974), Weber (1971), New York State Office of Education (1974), the CRAFT Project (Harris & Serwer, 1966), and the RMS Research Corporation (Tallmadge, 1974). The NIE report of the survey points out that, among successful programs, one finds "frequent inclusion of a 'phonics' component" (Guthrie, Samuels, Martuza, Seifert, Tyler & Edwall, 1976, Section I, p. 32).

The conclusions of these research efforts have been at least partially heeded by publishing houses. While not changing their broad, inclusive definitions of reading, by the late 1960's, some houses that had traditionally been publishers of programs employing whole-word methods began to incorporate into their latest editions, earlier and more substantial phonics components. In 1975, Popp noted that phonics instruction appeared to be starting earlier

in some of the programs recently published by companies that had previously produced meaning-emphasis programs. Many other beginning reading programs had been totally developed since the mid 1960's, adhering to code-emphasis principles from their inception. Almost all beginning reading programs now claim to teach more phonics and earlier phonics.

Where do the results of these recent trends lead us in 1977 as we undertake an analysis of beginning reading instruction in eight commercial programs?[2] Recognizing that reading programs are enormously complex and, therefore, can be analyzed and compared along a large number of dimensions, we have chosen to confine our analysis to dimensions intended to study how instruction is arranged in the first two grades of elementary school for teaching beginning readers to break the code; i.e., to understand that printed letters represent particular sounds and words in oral language. On the basis of the research cited above, theory, and our own practical experience, we believe that the primary objective of beginning reading is the acquisition of word attack skills and word recognition abilities. We will attempt to discriminate among the instructional elements in the eight programs in terms of their potential effectiveness and efficiency for teaching the printed code for spoken language. We will look at how much is taught during these first two grades, the sequencing of instruction in those grades and the kind of pedagogy employed to teach word attack strategies.

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[2]Beck and Block (in press) was an invited paper at the conference on Theory and Practice in Beginning Reading Instruction (April, 1976). That pioneering work, analyzing the Ginn and Palo Alto programs, has been extended to include the six other commercially published beginning reading programs studied in this document.

Rationale for Selection of the Eight Programs

Our determination of the eight programs included in this study resulted from two considerations: first, that the programs included be used with compensatory education students, and second, that they be representative of programs that employ different approaches to beginning reading instruction. Table 1 lists the complete titles, publishers, and date of publication for each of the eight programs finally selected. The last column in the table supplies the label for each program as it will be referred to in this text. In some cases, the program label is an abbreviated version of the title of the program, in other cases it is the publisher's name.

It is important to note from the outset that we defined our target population, compensatory education students, in an uncomplicated manner; they are simply those children who will not learn to read easily. Through informal discussions with NIE Compensatory Education staff, we obtained the names of programs that were mentioned in response to interviews conducted through the NIE National Survey of Compensatory Education (NIE, 1976) as being used with compensatory education students. All eight of the programs listed in Table 1 were cited in the interviews.

In addition, by reviewing program materials (promotional literature, introductory statements, overviews, etc.), we learned that five of the eight programs state expressly their intent for use with slower learners. For example, Open Highways: the program is intended for "children and young people who need repeated review, reteaching, and practice in the skills required to get meaning from print" (My Starter Book , p. 18); Merrill:

the program was "specifically developed to meet the needs of the pupil who might have difficulty getting meaning and satisfaction from reading" (Book A, p. 5); Palo Alto: the target population includes children with "limited oral language development, children with below average learning abilities, those with perceptual difficulties" (promotional materials); Sullivan: "Programmed Reading has been successfully used with non-English speaking students, students who are deaf, partially sighted, or mentally deficient" (Books 1 and 1a, p. 10); Distar: "If the teacher follows the program carefully, she will be able to teach children who would be likely to fail if she used less care" (Distar Reading I, p. 1).

Implied in Bank Street's philosophy of program development was the notion that urban children, particularly black urban children, may have experienced difficulty learning to read because they could not relate to the white middle class situations and values portrayed in basal reading series prior to the mid-1960's. The first Bank Street readers entered the market in 1965; they included minority children as main story characters in city-type story situations. Bank Street was the first series to employ this emphasis. Because of its "urban thrust", Bank Street became quite popular in urban schools.

Ginn and Houghton Mifflin are both used so pervasively that it is inevitable that they are being employed to teach beginning reading to students who have difficulty learning to read. While we were unable to obtain specific distribution information for Houghton Mifflin, we did learn that Ginn 360, the predecessor to the Ginn edition included in our study, was used with over 15 million children (Beck & Block, in press).

Thus, through information provided by the NIE Compensatory Education staff, through specific statements made by developers of the programs, and through inferences made about probable use of extensively-marketed programs, we have ascertained that all eight of the programs selected are being used by compensatory education students.

The selection of our programs also reflects equal representation of basal programs with phonics components (i.e., Ginn, Houghton Mifflin, Bank Street, and Open Highways) and code-emphasis programs (i.e., Distar, Sullivan, Palo Alto, and Merrill).

In terms of materials within each program that were analyzed for this study, we included only the components most necessary to conduct the lessons: the teacher's manuals, the students' readers, and the students' workbooks. We also excluded program materials that were exclusively "reading readiness" components.

Relationships Among Largest Program Content Units and School Grades

The largest unit of content in the Merrill, Ginn, Houghton Mifflin, and Bank Street programs is called a Level. However, each of these identically-termed Levels contains a different amount of content in each program, and, a different number of Levels constitutes the reading curriculum through second grade. To exemplify the possible confusion that arises, it would be inaccurate to compare the second Level in Ginn to the second Level in Bank Street on the grounds that they are both the second content unit in their respective programs and therefore should be roughly equivalent. To compound this problem, the largest unit of content in the Sullivan, Palo Alto, and Open Highways programs is called a Book. Once again, a differing

number of books provides instruction through second grade in each program. Distar calls its largest program content unit a Storybook.

Since each program provides its instruction in content units that are variously titled and that contain unequal amounts of content, we devised a way of representing common ground in order to compare programs at approximately equivalent developmental levels during the first two years of reading instruction. Figure 1 illustrates the apportioning of the major content units of the eight programs according to their projected use in the first two grades. (See Appendix A for a description of the methods used for determining the relationships.) For example, the first line in Figure 1 shows that the Take-Home Sheets and Storybooks 1, 2, and 3 would likely be used in the first grade of the Distar I program. In second grade, Storybooks 1, 2, 3, and 4 from Distar II would be used. The allocation of unequal units of time to cover different storybooks reflects the fact that the Distar Storybooks are of different lengths in first and second grades.

In our subsequent discussions, we have used the relationships in Figure 1 to enable certain comparative statements to be made among programs. To determine about where the student would be in the middle of first grade in any of the eight programs, for example, the reader should focus on the middle of the first grade portion of the figure and read down.

Definitions of Reading: The Scope of the Programs

Program developers' definitions of reading can have important instructional consequences. We believe that they can influence the selection of content taught and the teaching procedures used. One may therefore expect eight programs that reflect two generally different approaches to beginning reading

to define the aims of their programs quite differently. However, using the programs' surface definitions, this is not the case with the eight programs selected for this study.

All eight of the programs include among their aims teaching decoding and comprehension. Ginn and Houghton Mifflin also specify such broader aims as development of library and reference skills, literary skills, critical evaluation, and using ideas (many of which come into play after second grade), but decoding and comprehension remain at least the core goals of all eight programs. We have previously defined decoding as the translation of print to speech. Implicit in this definition is that meaning is derived from this translation. Since comprehension occurs inside the head where it cannot be directly observed, we believe the programs use the term "comprehension" as it relates to specific activities or tasks devised to assess whether comprehension has occurred. Thus, on this level, all eight programs are in harmony according to their basic definitions of reading. It is within the operationalization of the definitions, i.e., how the programs state their intent to go about teaching decoding and comprehension, that some differences begin to appear between the two categories of programs.

Since the teaching of decoding is the major concern of this paper, let's examine for a moment the differences in how the eight programs propose to teach this reading skill. We believe that no program developer would disagree with the statement that many factors come into play in the translation of print to speech. Predominant among these factors are two types of clues that can help unlock the print-to-speech code: a) clues that come from outside the particular word that is being decoded at the moment, such as the

syntactic and semantic clues that surround the word, picture clues, etc.; and b) phonological clues within the word that come from knowing expressly that letter/sound relationships do exist and can be employed specifically to unlock the code. Once again, no one would argue that decoding isn't facilitated by using both of these sets of clues and relationships. The difference between the two sets of programs is in which type of clue they stress more emphatically. Along this dimension the line between basal and code-emphasis programs is sharply drawn. From explicit statements contained in the programs or inferences made from their pedagogy we see the basal programs stressing the use of the surrounding context and picture clues. While all four basals also teach phonological clues to words, it becomes clear from their definitions that these are of less importance than syntactical, semantic, and picture clues. On the other hand, the four code-emphasis programs stress deriving the major decoding clues from the phonological features of the words, with less emphasis placed on clues that surround the words. In fact, Merrill deliberately presents no pictures at all in text, to refrain from supplying meaning independent of the words themselves. Distar reserves the use of pictures as a confirmation of meaning, rather than an aid. Pictures are presented on the page following the text.

Thus, although two of the basal programs present broader, more inclusive definitions of reading, all eight programs agree that the aim of a beginning reading program should be to teach decoding and comprehension. As this section has begun to show, and the rest of the paper will note in detail, it is in <u>how</u> these definitions are applied that the programs differ.

Flow of Instruction in the Lessons of the Programs

Within the Books or Levels or Storybooks of the eight programs is the more basic unit of content, the lesson. There is a flow of instruction within the lessons of our programs that determines the instructional relationship and temporal order of story reading and skills development, the two commonly occurring instructional events in beginning reading.[3]

In the four code-emphasis programs, the bulk of skills development takes place prior to story reading. Since we have limited ourselves in this paper to analyzing aspects relevant to decoding, the skills development we are talking about here is the development of word attack and word recognition abilities. In the code-emphasis programs, the skills development exercises that precede story reading most often introduce a new letter/sound correspondence and the subsequent story uses words that contain that correspondence. This kind of sequencing suggests that, for code-emphasis programs, the story is viewed primarily as an occasion for the child to apply learned correspondences to words in connected text. Through repeated exposure, words that start out being decoded through word attack become familiar enough to begin being recognized instantly. This notion of proceeding from word attack to word recognition is central to the code-emphasis programs.

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[3]We would like the reader to keep two things in mind as we talk about the flow of instruction. The first is that we are assuming that a teacher will teach in the same order specified in the teacher's manual. The second is that no time allocation is being implied here. There is great variation from classroom to classroom and school to school in the amount of time that is allocated for reading instruction (see Guthrie et al, 1976, pp. 11-12, Section II, for a more detailed presentation of this point), so we are in no way implying that a lesson is the amount of content covered in one day; it is merely the basic unit of related content in each program.

In contrast, for three of our four basal programs, story reading precedes word attack activities. We have already established that in the basals, extensive use of surrounding context and picture support are primary tools for decoding. Story-reading-first seems a logical sequence, therefore, since stories are the optimal place to find such clues. The conceptualization of story reading in basals seems to be that stories are the best place to present the first encounter with new words. These words are identified by word recognition techniques (sight word teaching as whole units); it is not until after story reading that word attack activities are centered on this corpus of words.

Bank Street is alone among the basals in this study in that it seems to "hedge its bets." Bank Street presents some word attack activities prior to story reading, the story is then read, and after that, another set of skills development activities, including word attack, is presented.

Thus, in the temporal ordering of a lesson, the basal programs (with the exception of Bank Street as just noted) go from story reading to the teaching of word attack skills. The code-emphasis programs move from activities that promote word attack to story reading.

Letter/Sound Correspondences

The dimensions in this, the beginning of the major part of our analysis, fall into three general categories: 1) what is taught in beginning reading programs, 2) when it is taught, and 3) how it is taught. In order to discuss what is taught, we need to point out that reading, unlike other school curricula, is not a body of knowledge from which curriculum developers can extract the content to be presented to children. Reading is a skill--a

process in which people engage--rather than a body of knowledge and, as such, there can be profound disagreement in determining "what" to teach.

The "What" of Beginning Reading Instruction

Hence, our first problem was to determine what we would consider the subject matter--the "what"--of our beginning reading programs. Carroll has noted that if there is a content to the subject matter of reading, "that content is the relation between the structure of spoken messages and the system of marks or symbols used to represent these messages" (1964, p. 339). We would like to narrow Carroll's definition further to specify the content of beginning reading curricula as the letter/sound correspondences that are presented. To us, this seems the most sensible description of the content to be taught, as it is a "generative" form of knowledge. The notion of "generative" forms of learning as proposed by Bruner (1966) focuses on knowledge and skills that learners can use to derive additional knowledge and skills for themselves. In the instance of reading, this would seem to imply helping the learner to understand the regularities of the coding system, so that he or she does not remain dependent upon an outside source to translate a printed word to its oral representation, but that he or she can "figure it out" independently. Thus, the content that will be described and analyzed is the letter/sound correspondences taught by each program.

In one sense, all reading programs, including the older whole-word approaches, have always "taught" letter/sound relationships; by this we mean that millions of children who learned to read through the older whole-word programs sooner or later induced many of the letter/sound generalizations in the language. The point is that the older programs did not make induction easy, for the words they used were not organized to maximize the regularities

in the coding system and their phonics instruction started late and was sparse and rather unsystematic. As noted earlier in this paper, despite differences in their approaches to the teaching of beginning reading, all eight of the programs under consideration in this study do provide earlier and more systematic instruction in letter/sound correspondences than did the older basal programs. Our programs can thus be compared along their established, ordered sequence for introducing letter/sound correspondences.

A Caution About Letter/Sound Correspondences. Godfrey Dewey, in a study conducted to determine the relative frequency of the spellings of sounds and the pronunciations of spellings of the English language, noted that "at the professional level of linguistic scholarship, there are wide divergencies of opinion both as to the number and nature of the sounds of English speech" (1970, p. 8). In his study, he used 41 phonemes (plus the word the) as the number of English sound distinctions recognizable to the average layman's ear, but cautions that the 41 phonemes are of minimum precision and are not sophisticated enough for linguistic professionals. Even so, working from these 41 phonemes, he found that there are 362 different letter combinations to represent them. Thus, when we talk about letter/sound correspondences, we are talking about at least 362 different combinations potentially to be learned. Now, all of these combinations are not equally useful, and as we will see, they certainly will not all be explicitly taught through second grade. To our best knowledge, there is no beginning reading program that attempts to explicitly teach all letter/sound correspondences. The point here is that there are a lot of letter/sound correspondences and that professionals in the field do not necessarily even agree as to what constitutes each one.

How Many are Taught? Our first task here involved determining the actual correspondences taught in the programs by translating each program's conventions for labeling into a common form. In some instances, extracting the correspondences that were taught was a straight-forward process since they could be determined from the programs' scope and sequence charts. However, in other programs, the listing of correspondences was either presented obliquely or was not presented at all; for these programs a very careful reading of each lesson was required. (Appendix B describes the guidelines and procedures we used to derive each program's correspondence sequence.) We need to point out that the eight sequence charts contained a massive amount of information that proved too unwieldy for inclusion in this document. In an attempt to reduce the amount of data for inclusion, we developed a single correspondence table containing information for all eight programs. This comprehensive table, Table E in Appendix B, lists all of the correspondences that are taught in any of the programs (170 in all, listed according to 12 categories). It indicates whether a particular correspondence is taught in a program and, if so, where it is taught in the first two grades in terms of half grade segments. The eight individual sequence charts and Table E provided the data for the several analyses that follow.

In our first analysis, to determine how many correspondences each program thought appropriate to teach through second grade, we simply counted the number of graphemic units introduced by each program. Table 2 presents the results of this analysis. As can be seen from Table 2, there is a large range in the number of correspondences presented, with Sullivan

(at 135) introducing over twice as many elements as Open Highways (65). Bank Street (98), Palo Alto (94), Merrill (93), and Ginn (88) fall closest together, their developers disagreeing only slightly on the number of correspondences that should be taught. Even among programs employing the same basic approach to reading there is no outstanding consensus of the ideal number of correspondences to present. Sullivan and Distar, two of our code-emphasis programs fall almost at opposite ends of the range with 135 and 76 correspondences respectively. The four basal programs (Houghton Mifflin, Bank Street, Ginn, and Open Highways) show almost as much disagreement, with Houghton Mifflin (111) at the high end of the range and Open Highways (65) at the low end. The only conclusion to be drawn from Table 2 then is that there is not a lot of agreement about how many correspondences to teach during the first two grades of school.

We must state strongly at this point, that we can form no conclusions at all concerning which program we would prefer based solely upon number of correspondences taught. On this dimension, more is not necessarily better. In fact, as we will soon discuss, presenting great numbers of correspondences may even be disadvantageous since it could confuse the determination of the most "ideal" sequencing of correspondence instruction.

Which Ones Are Taught? Before going into sequencing considerations, however, we will discuss briefly what correspondences are being taught, independent of their order of introduction. Given that there was not agreement among the programs about how many graphemic units to present, we cannot expect to see total consensus regarding which units are introduced.

Table 3 presents the 170 graphemic units taught by any of the programs through second grade. It also indicates how many of the eight programs thought it important to teach each graphemic unit. The correspondences are arranged in twelve categories; eleven traditional classes of correspondences and a catch-all "Other" category. Each entry in the table contains three elements: the graphemic unit taught (e.g., the letter a), a sample word indicating the sound for the graphemic unit (e.g., man), and a numerical entry denoting the number of programs (out of a possible 8) that teach that particular unit. From this table, the reader can quickly spot areas of agreement and disagreement among programs as to which correspondences to teach. By scanning the table, one can see, not unexpectedly, that the highest agreement is found in teaching the short vowels, the most often used long vowels (a and i in CVCe words; there is also close agreement on teaching o and u in CVCe words), and the most frequently used single consonants. We say that it is not unexpected that these are the elements most agreed upon since it is intuitively obvious to us that combinations of those grapheme/phoneme correspondences produce many words that are widely-used and extensively-understood by primary grades children. Beyond these areas, there appears to be great disagreement among programs as to what should be taught explicitly.

Let us speculate for a moment on why we see this disagreement. We believe it is probably occurring for two reasons. The first reason is that, as we look down the columns at the areas of lesser agreement, we believe we are spotting graphemic units that, used in conjunction with other graphemic units, are not necessarily useful in generating many words that are relevant

to primary grades children. The second possible reason for disagreement among programs could be in their respective notions of transfer. For instance, all eight programs teach the most common grapheme/phoneme correspondence for each of the 21 single consonants; however, as one looks down the Initial and Final Consonant Cluster columns, one sees that there is less and less agreement that all of these clusters need to be taught explicitly. The program developers who felt it unnecessary to attend explicitly to consonant clusters may be assuming that children will transfer their knowledge of the single consonant correspondences to instances where the single consonants are combined with other consonants but each retains the sound originally taught. Since explicitly teaching all of these occurrences could possibly "turn off" some students, in many cases we are sympathetic to the notion that children will transfer their knowledge of letter/sound correspondences from a single consonant to a consonant blend. However, this remains a delicate area of decision-making since too generalized teaching could also lose some students along the way, particularly students who have trouble learning to read. At this point in our study, we still cannot speculate which programs we prefer on the basis of these findings and the previous points discussed. They will all, however, be taken into consideration in forming opinions as additional variables are introduced.

Before we leave this topic, we would like to present from a slightly different perspective the extent of the differences in opinion as to which correspondences to introduce. As was determined from Table 2, Palo Alto and Merrill, two of our code-emphasis programs, are very close in

the number of correspondences each introduces through second grade, 94 and 93 respectively. Since we knew that these were the two programs agreeing most closely in number introduced, we ran a correlation to see how closely the two would agree on specific correspondences introduced. The correlation coefficient was .61, indicating that, although they do agree in many instances, there remains distinct disagreement, even between two programs that agree on number, as to which correspondences to teach in the first and second grades.

Anticipating Potential Problems: The Sequencing of Correspondences

We have just discussed the correspondences themselves, the content area of beginning reading instruction. Now let's turn to the sequencing of these correspondences, the "when" of instruction. A theme introduced by Block (Note 1) is relevant here. She stated that "curriculum design in reading...has many elements of an operations research problem. It is an attempt to maximize multiple outcomes while minimizing related potential costs, and the program variables you manipulate are interdependent, to various degrees" (p. 4).

We recognize and agree strongly that it can give a false picture of a program to consider one aspect of a developmental sequence independently of other aspects. It does, however, provide an opportunity to identify certain program dimensions and to determine whether program developers have incorporated research findings and empirical evidence into their sequencing decisions. Thus, we will attempt to isolate certain program sequencing variables; we will then combine these interdependent variables later and offer opinions about the programs as a whole.

Given that letter/sound correspondences are the content to be taught, and that making the learning of them as easy as possible is the developers' intended outcome, let's first look at the possible problems (the "related potential costs") that could occur. In presenting only two letter/sound correspondences, the following areas of confusion could occur: the two different graphemes involved could be confused by the learner; the grapheme from one correspondence could be confused with the phoneme from the other, and vice versa; and, the two phonemes could be confused. These are possible areas of confusion involved in presenting only two correspondences. It is difficult to visualize how compounded the problems are and the delicate balancing decisions that must be involved in sequencing the number of correspondences taught by our programs. The remainder of this section will concern the best ways that we believe some of these areas of possible confusion can be avoided and how our eight programs have either anticipated or exacerbated the problems.

Letters that Look Alike. The finding from research on perception, that letter recognition is mediated by the acquisition of distinctive features (Gibson, Gibson, Pick, & Osser, 1962; Gibson, Osser, & Hammond, 1962) has been around for 15 years, prior to the publication dates of our eight programs. One way that a reading program could attend to this finding would be to teach confusable letters at a wide distance from each other.

To exemplify how closely each of the eight programs heeded this research finding, we decided to select two highly similar letters and to plot the distance each program placed between teaching these letters, both in terms

of the number of intervening graphemes[4] and in terms of elapsed time in the school year between teaching the two confusable graphemes. Since b and d is the most difficult letter pair to discriminate (Popp, 1964), we selected that pair as an indication of how the programs would address this design decision.

Figure 2, an extension of the figure that showed the relationship among program content units and the school year, shows graphically the extent of separation in the teaching of b and d in the eight programs. Distar introduces 27 graphemes and about half a year of instruction between d and b. Bank Street's sequence, although only 5 other graphemes intervene, to some degree also concurs with the research finding since it separates the teaching of b and d by almost half a year. It is rather startling how closely, both in the short amount of time elapsed and in the small number of intervening correspondences introduced, the other six programs place this competitive letter pair.

The following example illustrates the usefulness of separating highly confusable letters. In previous work at LRDC, we experienced the use of the Sullivan program (which has very close introduction of the b and d) in dozens of first grade classrooms. We heard repeatedly from teachers that many children experienced confusion in distinguishing between the b and the d. When we later introduced the LRDC-developed beginning reading program, a program that widely separates these two competitive letters, into the same type of classrooms (same in the sense that the classroom populations were identical in SES), we never again heard of any b - d confusion. The solution

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[4] In this case, we counted only intervening graphemes with new letter shapes. For instance, in Sullivan, the double consonant nn intervenes between b and d. This was not counted as an intervening grapheme since the letter shape n had already been introduced.

to visual confusion of letters seems simple: separate them. We compliment Distar and Bank Street for attending to this issue, and we fault the other programs for allowing a possible area of confusion to exist.

Letters that Have More than One Sound. A concern regarding the sequencing of those graphemes that produce two or more sounds has been unresolved for some time. Initially, should multiple sounds for the same grapheme be introduced at the same time? Or, should the grapheme be introduced with only one of the sounds that it produces? If so, how long after that should correspondences be presented using the same grapheme with its other sound(s)? How a program resolves these questions determines whether it contains a "set for regularity" or a "set for diversity."

A "set for regularity" implies that a one-to-one correspondence between a grapheme and a phoneme (e.g., the /a/ phoneme for the a grapheme) is established and used exclusively for a long time, often many months, before another phoneme that is also produced by the original grapheme is introduced (e.g., the /ā/ phoneme for the grapheme a). A "set for diversity" suggests that multiple phonemes for the same grapheme (e.g., both the /a/ and /ā/ phonemes for a) are introduced in proximity.

In order to determine each program's status concerning whether it is "set for regularity" or "set for diversity," we counted the number of intervening graphemes between the introduction of each program's first vowel grapheme/phoneme correspondence--it was a short vowel in each program--and the introduction of the grapheme/phoneme correspondence for the long sound of the same letter. We also identified how far apart this introduction was in terms of instructional time in the school year. Figure 3 shows the results of this analysis.

Distar is not present on Figure 3 because this particular counting and plotting analysis is not applicable. Distar employs a special orthography throughout first grade that enables all of its correspondences to be presented as a one-for-one mapping between sounds and the letters that represent them. For example, the /a/ phoneme and the /ā/ phoneme are represented in Distar by the graphemes a and ā respectively. Therefore, until second grade when the special orthography begins to be replaced by standard English orthography, Distar maintains an extreme position of a "set for regularity."

Continuing with Figure 3, we see that in Sullivan, 79 other correspondences intervene between the introduction of the short sound of a particular vowel grapheme and the long sound of that same grapheme. We also see that the time span elapsed is close to a full year of instruction, with the short vowel grapheme/phoneme correspondence introduced at the beginning of first grade and the long vowel grapheme/phoneme correspondence first appearing near the end of first grade. As depicted in the figure, Palo Alto and Merrill separate the introduction of these correspondences even further in terms of instructional time elapsed.

When considering a program's position on a "set for regularity" or a "set for diversity," it is important to note that this concept represents a difference in degree, rather than in kind. However, with this type of correspondence (short vowel, long vowel, same grapheme), in the cases of Sullivan and Palo Alto, we are probably approaching the end points of the range; and, in the case of Merrill, we might be at the endpoint. These three programs clearly fall into the "set for regularity" category, as they

adhere quite strictly to a one-for-one mapping between vowel sounds and the letters that spell them.

The opposite end of the range is found in the Open Highways program where multiple sounds for a grapheme are taught within the same lesson. As Figure 3 indicates, the first instance of teaching a vowel grapheme/phoneme correspondence does not occur until the second half of first grade, but during that time, multiple sounds for the grapheme are introduced simultaneously. In this lesson, the "short a," "long a," and the "r-controlled a" as in bar are all introduced. Ginn also shows a preference for the "set for diversity" by separating its first short and long vowel grapheme/phoneme correspondences by 9 intervening correspondences and by only a month or so of instructional time.

The remaining two programs (Houghton Mifflin and Bank Street) fall in the middle ranges, separating their short and long vowels by about a half a year of instructional time.

The results of this analysis thus show that there is wide divergence of opinion among the developers of the eight programs as to how the "regularity/diversity" issue should be addressed. It is particularly interesting to note that the divergence of opinion is greatest among the five programs that explicitly claim to be aimed at our target population; i.e., Sullivan, Palo Alto, Merrill, and in a sense, Distar favor the "set for regularity" while Open Highways is an extreme example of a "set for diversity." The obvious question remains: Which opinion is right?

In an attempt to answer this question, we first look to research findings for a solution. Studies by Levin and Watson (1963) support the "set

for diversity" position. In their words, "When a graphic symbol stands for two or more sounds, it should be learned and transferred more readily when the variations are learned together than when they are learned separately" (p. 21). However, Popp (in press) reports on some work done by her students at Harvard that in our opinion captures quite succinctly the problems of applying the Levin and Watson conclusions to beginning reading instruction. Popp cited her students' work in this way:

> Blackman, Marston and Reinhardt (1973) call attention to problems with the research (Levin and Watson's) in terms of a) the age of the subjects (always older readers), b) the design of the word lists using an artificial orthography, c) the use of trigrams or even letters rather than words in context, d) the validity of equating the experimental task with the learning task confronting the six-year-old beginning reader, and e) the validity of equating the experimental teaching method to the training that might go on in a classroom....These critics conclude that the basic question about training multiple correspondence successively or concurrently still remains (pp. 11-12).

We agree that the basic question about training multiple correspondences successively or concurrently still remains to be answered conclusively by research evidence. We would, therefore, like to discuss the question in terms of our own experience in the field. One of the present authors has had occasions to teach beginning readers using programs that represented both regularity and diversity points of view; she found that the extreme diversity approach was confounding for many children and was especially debilitating for children in our target population. On the other hand, while she found that a regularity approach was easier for her students, on several occasions when the second sound of a grapheme was not introduced until much later, the children had difficulty in reading words with the new correspondence; they continued to supply the previously-learned phoneme for the grapheme.

Before we express our opinion about the regularity/diversity issue, a study by Venezky and Johnson (1973) is relevant to the point just made. Their study determined how well first, second, and third grade students had acquired four grapheme/phoneme correspondences that employed multiple phonemes for the same grapheme; the correspondences were the /a/ and /$\bar{a}$/ sounds for the a grapheme and the /k/ and /s/ phonemes for the c grapheme. Synthetic words were constructed using these correspondences, and lists of these words were presented to first, second, and third grade students who had been taught in first grade with either a code-emphasis program or a basal program with heavy supplementary doses of phonics instruction. Their findings were:

> The long and short pronunciations of a and the /k/ pronunciation of c were learned to a high degree of accuracy and showed no significant differences across grade levels....For c-/s/, however, learning was extremely low at all grade levels and reached only 45% correct by the end of Grade 3....The failure to acquire the c-/s/ pattern, especially in word-initial position, appears to result primarily from the failure of most beginning reading texts to include a sufficient sampling of words that begin with c before e, i, or y (p. 109).

Venezky and Johnson's hypothesis that too few c-/s/ words were included in beginning reading texts implies perhaps that too many c-/k/ words were introduced and that over-learning of that correspondence could also have occurred by having the correspondences spaced too far apart. In order to look at this notion, we charted through second grade for each of our eight programs where the c-/k/ correspondence and the c-/s/ correspondence are introduced. As illustrated in Figure 4, through second grade, Distar, Palo Alto, and Merrill reflect extreme positions of a "set for regularity" with the c-/k/ correspondence, as the c-/s/ relationship is never taught at all in those

grades. In Sullivan, Ginn, and Bank Street the two correspondences for the multi-phonemed grapheme are also widely separated. Only Houghton Mifflin and Open Highways reflect more of a "set for diversity" in that they introduce these particular correspondences fairly close to each other. We wonder how Houghton Mifflin and Open Highways students would have performed in Venezky and Johnson's study in comparison to students in the other six programs.

Returning to our own opinions on the "regularity/diversity" issue, we think there are two alternatives. The first would be to solve the problem in a "sidestep maneuver" as Distar has done by making simple changes in the orthography in order to present a different grapheme for each new phoneme. Here, we need to point out that not only do we approve of Distar's means of resolving this problem, but we independently devised our own slightly altered orthography for a beginning reading program designed at LRDC (Beck & Mitroff, 1972). At the place in LRDC's program where the special orthography is replaced by standard spelling, we have not seen students have any trouble making the transition; nor have teachers observed any difficulty.

For those readers not convinced by our "sidestep" solution to the "regularity/diversity" question, we would recommend a "middle ground" solution. We are opposed to the extreme diversity position represented by Open Highways in its teaching of the first short and long vowel grapheme/phoneme correspondences. We are also concerned that the extreme regularity positions exemplified by Sullivan, Palo Alto, and Merrill in teaching these correspondences will result in the overlearning of a "partial truth" and

will interfere with the learning of the later-presented phoneme for the grapheme. Hence, for the short-long vowel teaching example of the "diversity/regularity" position, we find Ginn, Houghton Mifflin, and Bank Street to be the most reasonable. No such alternative is presented to us for the multi-phonemed c grapheme. Open Highways and Houghton Mifflin perhaps favor the set for diversity a little too strongly for our taste, but we still prefer them to the extreme separation reflected in the other programs.

Two Letters that Combine to Produce a "New" Sound. The previous section was concerned with the sequencing of correspondences that consist of multiple sounds for the same grapheme. At this point, let's turn our attention to sequencing considerations for two graphemes that combine to produce a single sound, i.e., a digraph. In this discussion, a special case of digraph will be considered; the situation where the phoneme produced by the combination of the two graphemes is one that is never produced by either grapheme alone. We will use consonant digraphs that fall in this category to illustrate the point.

We believe that the decision each program has made concerning when to introduce this type of correspondence may affect children's developing concept of how the writing system of the English language works. If single letter-single sound correspondences are introduced exclusively for an extended period of time, students may become locked into another "partial truth" situation, in this case the belief that one letter always makes one sound. If the student is not alerted to situations in which he or she needs to "look ahead" to detect the presence of a second grapheme in a digraph, he

or she will be unable to correctly decode words containing this type of correspondence.[5] Introducing digraphs early is one way to help establish the concept that a target letter must be considered in its environment with other letters before its sound can be determined.

Figure 5 presents graphically the positioning in each program of the first consonant digraph whose letters combine to produce a sound not produced by either letter alone. As we can see from Figure 5, Distar, Sullivan, Houghton Mifflin, and Open Highways all introduce this type of correspondence very early in their instructional sequences, well within the first half of first grade. This early introduction of digraph examples may facilitate development of appropriate "looking ahead" behaviors to produce correctly the sound for multi-graphemed correspondences. Merrill, Ginn, and Bank Street introduce this special kind of digraph within first grade, but it is not until rather late in the year. We suspect, on the other hand, that Palo Alto's sequencing, which defers the introduction until the middle of second grade, may result in the child's becoming locked into the "single letter, single sound" misunderstanding. On this dimension, we clearly prefer the programs that integrate the teaching of digraphs with the teaching of single letter correspondences early in the instructional sequence.

We have just discussed three aspects of the decision-making process involved in sequencing correspondences; for a few pages we have assumed that each of these aspects is an independent decision, and we have stated which programs we favor based upon each of these individual considerations.

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[5] Diphthongs, r and l controlled vowels, and VCe words are other instances where the student must "look ahead" to determine the correct phoneme.

Unfortunately, the reality of correspondence sequencing is not that simple. Returning to Block (Note 1) and continuing with the point she made, "It is a fact of life in reading program design that you can rarely consider one aspect of a developmental sequence independently of other aspects. It is quite possible that when adapting to the difficulties inherent in one factor, you may unintentionally increase difficulty associated with other factors" (p. 4).

As an example of this important theme, in the following section of this paper, we will recognize the interdependence of two sequencing variables and we will demonstrate that they should be considered in conjunction with each other, sometimes to the detriment of research findings.

Ease of correspondence learning and utility of correspondences. The two dimensions we selected to be applied to our eight programs in this section are: 1) the ease with which a given letter/sound correspondence can be learned; and 2) the utility of a letter/sound correspondence in conjunction with previously introduced correspondences in generating words that are meaningful to children.

Coleman (1970) reported some research in terms of the relative ease with which letter/sound correspondences are learned. In his study, confirming Bridge's earlier work (Note 2), he determined a rank ordering of thirty-five letters and letter combinations according to the ease with which preschool children learn them. He suggested that reading program developers use the easier-to-learn correspondences in the beginning portions of their reading programs.

Following is the listing of Coleman's 15 easiest-to-learn grapheme/phoneme correspondences (the graphemes are presented here with a word to illustrate the phoneme each represents):

1. s as in see
2. i e as in ride
3. o e as in nose
4. z as in zoo
5. sh as in shut
6. o as in hot
7. ow as in how
8. m as in me
9. ue as in due
10. k as in kit
11. oo as in boot
12. f as in fan
13. th as in the and thank (no distinction was made between voiced and unvoiced th)
14. v as in vest
15. ee as in see

On the basis of ease of learning alone, it would be all well and good for program developers to use Coleman's sequence to present the first 15 grapheme/phoneme correspondences beginning readers should learn. However, we believe that it is equally important for the correspondences selected to produce meaningful words, words that are particularly relevant to the language of children (Beck & Mitroff, 1972). Words that can be generated from Coleman's 15 most easy correspondences include: fee, five, mime, mom, moss, see, size, sow, sue, thee, those, vow, and zoom. The words five, mom, see, size, those, and zoom would probably be contained in the vocabularies of our target population, but the others most likely wouldn't be. Does this matter? We hypothesize that it does.

Diederich (1973b) suggests that a major explanation for the whole word approach taking such a firm hold in the United States in the early 1930's had much to do with weaknesses in the "abstract material" to which beginning

readers of previous years had been exposed. In addition, from our own observations of children in the very beginning stages of learning to read, we believe that it is vital for the beginning reader to "make closure" and realize when he or she has read a word. To us, meaning is implicit in the decoding stage of reading as without meaning, the process is "recoding" (i.e., going from one code to another). We suggest that this recognition of meaning would not likely occur with the words fee, thee, sue, sow, vow, mime, and moss.

We believe that these two variables, the ease of learning correspondences and their use in the production of meaningful words, cannot be considered independently; they must be combined to generate the sequence of the first few letter/sound correspondences to be taught. Let's see now how each of our eight programs fares on this issue. Table 4 presents the first 15 correspondences that are presented in each of the eight programs.[6] The correspondences that are also contained in Coleman's ranking of the 15 easiest to learn are starred. Under the correspondence sequence for each program is a listing of the words that can be generated in each program using its first 15 letter/sound correspondences presented.[7]

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[6]The reader should note here that we are making a comparison solely in terms of the first 15 correspondences presented. There is a wide range in the programs in terms of spacing their correspondences. Hence, some programs take much longer to present their first 15 correspondences than do other programs.

[7]These words are not necessarily all used by the programs at this point in instruction. They are words that could be read by students at this point, however. Although we think that the lists are indicative of most words possible, there have, no doubt, been omissions in their determination.

As can be seen from Table 4, all eight programs present at least some of Coleman's easiest-to-learn correspondences. There is total agreement among the programs to include s, m, and f in their sequences of the first 15 correspondences taught. Palo Alto alone teaches the short o; Houghton Mifflin and Open Highways teach the k; Sullivan and Open Highways include the th digraph; Palo Alto, Merrill, and Ginn agree on including the v; and Distar alone uses the ee. Seven of Coleman's easiest-to-learn correspondences appear nowhere within the first 15 correspondences taught in any of our programs.

We could speculate that this occurred because all of the developers wanted to sequence correspondences so as to be able to generate words that are meaningful to children and that can be read based upon the correspondences known. This may be the case with most of our programs, but it certainly cannot be true for Ginn, Houghton Mifflin, and Open Highways. No words at all can be formed solely from known correspondences since these programs include no vowels in their earliest-taught correspondences. We suspect that these three programs wanted to get through the consonant class before introducing vowels; we fault them since, at this point in their sequences, the children in the programs can read only words that they have learned as sight words.

Words that we believe to be meaningful to children can be generated from the sequences of the other five programs. We prefer Palo Alto here based upon the sheer number of possible words. Certainly many words can be selected from this long list that would be meaningful when read by children in our target population. We also like Distar and Sullivan on the possible words dimension because their sequencing allows deviation

from the repetitious CVC words. In Distar and Sullivan, it is possible to generate meaningful words using different patterns (such as digraphs and the ing ending).

Thus, considering the dimensions of ease of learning and utility of correspondences together, we prefer the Palo Alto, Distar, and Sullivan sequences of the first 15 correspondences presented.

In summary, we have thus far considered the letter/sound correspondences selected for instruction in our eight programs. We have also isolated a few important factors in the sequencing of correspondences in reading program design, and we have compared our programs along those dimensions. These analyses were undertaken to present how the eight programs agree and differ with available research findings, logical arguments, and our own practical experience in correspondence sequencing. We make no claim, however, that these analyses have been exhaustive in the sense of evaluating all the program variables involved.

Let's leave sequencing considerations now and turn to the pedagogical nature of correspondence instruction or, how the content matter of beginning reading is presented to the students.

Pedagogy of the Correspondence Lessons: "How" the Content Matter of Beginning Reading is Presented

In most beginning reading programs, the teacher introduces the new content (e.g., a letter/sound correspondence, a set of sight words) to the children. The teacher's manuals of each of our programs contain very definite suggestions to the teacher regarding strategies for presenting content. While some teachers may not follow these suggestions exactly, there is evidence that many teachers do consider the teacher's manuals highly influential on their classroom performance (Diederich, 1973a).

To take a detailed look at the instructional strategy suggestions contained in all the programs, we searched for similar content that would be taught at approximately the same time in the school year. We decided to look at the instruction for short vowels because vowels are taught in greater detail than consonant correspondences, and also because all eight programs teach at least several short vowels in the first grade.

Among the eight programs, there was no one place in the school year where they would all be teaching the same short vowel. We did find that the time of introduction of the short e in some programs was close to the time of introduction of the short i in the remaining programs. Our analysis here will therefore use abstracted versions of the teaching directions for either short i or short e lessons.

Our method for abstracting the teaching directions involved close reading of the teacher's manuals, identifying and retaining important instructional elements while eliminating less important discursive content. The instructional elements that we retained for the abstracted versions of the strategy descriptions include: descriptions relating to the stimulus, task directions, and students' responses. We also tried to include the "flavor" of the lessons by quoting directly from the manuals from time to time. These abstracted teaching directions are contained in the following appendices: Appendix C for Distar, Appendix D for Sullivan, Appendix E for Palo Alto, Appendix F for Merrill, Appendix G for Ginn, Appendix H for Houghton Mifflin, Appendix I for Bank Street, and Appendix J for Open Highways. Reference will be made in text to the abstracted strategies contained in the appendices through a system of notations in which the appendix, objective, main lesson event, and secondary lesson event will be noted in turn. For

example, C. B. 3. b. refers to Appendix C (the Distar program's teaching directions), Objective B, main event 3, and secondary event b, the line on page 93 beginning with "teacher asks individuals to say sound."

Each of the instructional sequences to be considered here has as its objective the child's acquisition of a correspondence. We have already noted that letter/sound knowledge is essential for unlocking the pronunciation of an unfamiliar printed word. Indeed, Carroll suggests that "when the learner has mastered the important grapheme/phoneme correspondences... the learner may be said to have 'broken the code' of English orthography" (1964, p. 340). In addition to the acquisition of correspondence knowledge, however, we submit that there is a second element that is also essential to word attack. This necessary element is the ability to synthesize sounds into a word. This skill has variously been termed blending, sounding out, and sequential decoding; it appears in every task analysis of word attack of which we are aware (Bateman, in press; Resnick & Beck, 1976; Venezky, 1975a).

Based upon the method of presentation of the short e or short i correspondences in each of our eight programs, we will therefore be assessing two things: first, whether we believe that most of the children in our target population will be able to learn the new correspondence that is being presented; and second, whether they will be able to use the new correspondence knowledge with other known correspondences to synthesize sounds into words.

We will describe the lessons in each of the four code-emphasis programs (Distar, Sullivan, Palo Alto, and Merrill) in turn, and then summarize with comparisons and contrasts among them. We will then proceed in the same manner for the four basal programs.

Distar. Distar takes a direct approach to letter/sound instruction. The instructional sequence begins with a "pure" auditory analysis activity ("pure" auditory tasks are those that do not include printed stimuli). In this first activity (C. A. 1.), the children hear the word is and are required to produce the phonemes in that word in an extended manner: /iiisss/. Instruction then moves quickly to introducing the unfamiliar grapheme that represents the /i/ sound that the children have been saying and hearing in is. The teacher models the association first, by pointing to the letter i and saying the /i/ sound (C. B. 2.). The children, in unison, imitate the teacher's model (C. B. 3. a.); then individuals respond in turn (C. B. 3. b.).

Next, the new letter is placed into a set of letters where the children demonstrate that they can produce the correct phoneme for i when it is contained in a set of previously learned correspondences (C. B. 4.). Later in the sequence, children also practice discriminating the printed representation of the new symbol i from other, familiar printed letters (C. H. 1. and C. H. 3.), and they also learn to print the new letter on practice pages in their workbooks (C. H. 2.).

The Distar sequence also specifies synthesis tasks. In a "pure" auditory synthesis task (C. C. 1.), the teacher says /iiisss/, and the children are expected to synthesize that stimulus into the word is. This same strategy is also used in association with print (C. O. 1.) where the students say the phonemes of the word if in a slow, extended manner in response to the printed stimulus and then say the sounds fast, reading the word. Furthermore, word blending in response to a printed stimulus also occurs when children are asked to produce words that "rhyme with ing" (such as ring and sing in exercises C. J. and C. M.) by blending various initial consonants with ing.

This description of the introduction of the i-/i/ correspondence in Distar does not effectively capture the frequency of review that occurs in the program; letter/sound correspondences and blending are practiced frequently throughout the Distar lessons. It is our strong opinion that children using Distar will learn the new correspondence since the instruction is directly to the point (i.e., the grapheme/phoneme correspondence is presented directly--no word is used to "mediate" the new phoneme; also, letter names are not used during the lesson). We also believe that the children in our target population will develop synthesizing ability through repeated encounters with Distar's training strategy for blending.

Sullivan. Sullivan begins the instructional sequence of the short e correspondence by eliciting the letter name from the children (D. A. 1.). The new association is then modeled by the teacher, who points out the grapheme e in the word egg and says that the sound made is /e/ as in egg (D. A. 2.); the children imitate the teacher's model, repeating /e/ and egg several times (D. A. 2. a.). Note that a word is used here to mediate the acquisition of the new correspondences; i.e., the correspondence is taught using the e grapheme as pronounced in the word egg.

Several "pure" auditory activities follow the printed e to /e/ association using the word egg. For instance, the teacher orally presents the letter names a, i, and e, and the children are expected to produce the sounds made by the letters (D. A. 3.). The children are also asked to generate examples of words that begin with /a/, /i/, and /e/ (D. A. 3. a.). Finally, the teacher says pairs of minimally contrasting words (e.g., pin/pen) and the children determine which word has the "sound of e" (D. B. 1. a.), and they give the name of the vowel letter in the contrasting word.

There are two events in the short e correspondence sequence that attempt to touch on the development of synthesizing abilities. In D. A. 4. a., the teacher writes six words on the board and is directed to help the students "sound out words." In D. C. 3. c., to introduce the word best, the teacher asks one student to give the sounds of b and e and another to provide the sound of st. Then the teacher is instructed to say the word "fast" to prompt the students.

There is an aspect of the Sullivan sequence for presenting new words that deserves discussion here. In a code-emphasis program that stresses the "phonetic regularity" of its words and that explicitly teaches letter/sound associations, we were surprised to see the "whole-word" teaching technique of introducing phonically regular new words by associating a picture of the word with its printed label (the words bed and dress in D. C. 1. and D. C. 2.). It seems to us that Sullivan has passed up an ideal opportunity to check the children's ability to apply the newly-learned correspondence to unlock the pronunciation of the new words. We think that the word alone should have been the stimulus here.

In summary, we believe that children will acquire the new correspondence from the instruction provided by Sullivan. Although the correspondence presentation is mediated by a word, the teacher does explicitly make the e to /e/ association, and there are many instances when the students are required to produce /e/ when they see e. However, we do have certain reservations about the way Sullivan presents the correspondence. It seems to us that instructional time is spent on activities that are not directly related to learning the e-/e/ relationship; e.g., when the children are required to say a phoneme after its letter name is presented orally, in the

absence of the printed stimulus. This is a difficult task that takes time to develop. We are also concerned that there are many instances in which the response elicited from the stimulus (the printed e) is variable. Given the printed e, sometimes the children are to respond with the phoneme only, sometimes with the letter name only, and sometimes with both. In these activities when the stimulus is constant and the required response is being changed arbitrarily, we believe that the letter/sound association is made unnecessarily elusive.

In respect to whether we believe children will be able to synthesize words on the basis of this lesson (and the many others that are similar), we reluctantly come to the conclusion that the answer is no. The direction to the teacher to help students sound out words is not adequate since we do not know how teachers will operationalize this advice. Likewise, the one-time instruction to the teacher to say a word "fast" is inadequate for developing synthesizing abilities in children. The teacher needs a strategy, not just a hint. There is a missing link in the Sullivan sequence. The students will learn the correspondences but will not likely have the ability to synthesize them into words.

Palo Alto. The Palo Alto sequence starts with the teacher telling the students to "listen to the sound that begins the words in, imp, igloo" (E. A. 1.). Then s/he explicitly tells the children that the sound is /i/ as in it (E. A. 1. a.). Note in this teaching sequence that the teacher will pronounce the isolated phoneme, but that the students are never requested to produce the phoneme in isolation. Next in the sequence, we see a traditional task that requires the children to identify pictures whose

names begin with the new sound (E. A. 2.). The children then learn the letter name of the new symbol and practice associating the printed letter i with its letter name when it is placed in a set of previously learned letters (E. B. 2.).

Children then receive their own i letter cards, which they add to their collection of letter cards of correspondences that have been introduced previously. The phoneme/grapheme relationship is established through the following exercise: in E. B. 3. a., the teacher says a word (e.g., in) and the children locate from their cards the letter that begins the word. Fourteen words are suggested, six i words and eight words that begin with other letters. Soon after this activity, the children are taught to write the new letter (E. C.).

Most of the remaining lesson events are activities that practice correspondences and that lead to development of synthesizing abilities. The program materials include a device called the Spelling Pocket, a cardboard card holder into which letter cards are inserted and horizontally manipulated. This device helps children to externalize the process of locating the position of phonemes within words and to make the phoneme/grapheme association. For example, In E. E. 2. a., when the teacher says in, the children place their i letter cards at the beginning of their Spelling Pockets to indicate that the i grapheme represents the first sound in in; when the teacher says sit, the children place their i letter cards in the middle of the Spelling Pocket, and so forth.

Words are also built using the Spelling Pockets. For example, in E. E. 4. b., when the teacher says him, the children are responsible for inserting the correct vowel letter card in between h and m in their Spelling

Pockets. In E. E. 3., the teacher places the letters s and t in the Spelling Pocket and puts an a between them. The children read sat. The teacher replaces a with i; the children read sit (E. E. 3. a.). It is important to note here that this is the first lesson activity in which the association goes from grapheme to phoneme; in all other activities it has been the reverse. Toward the end of the lesson, there is one other activity in which the association is practiced as grapheme to phoneme. Letter patterns that contain short i (e.g., im, it, in) are placed on a flannel board. The teacher puts various consonants in front of each of the patterns and the children read 22 different words (E. E. 8.).

We do think that most children in our target population will learn the i to /i/ correspondence from the instructional experience presented in Palo Alto; despite word mediation and letter naming, there are many activities in which the phoneme/grapheme relationship is made explicit in the instruction. The major comment we have concerning the Palo Alto presentation of the correspondence is that the initial presentation and practice presents the correspondence as going from phoneme to grapheme (E. B. 3. a., E. E. 2. a., E. E. 4. a. b. c., and E. E. 5.). In actuality, when children are faced with an unfamiliar word in a word attack situation, the sequence goes the other way, from grapheme to phoneme. We would like to have seen more practice in Palo Alto going in this direction (such as was done in E. E. 3. and E. E. 8.) where the grapheme is the stimulus and the phoneme the response.

Although blending is not taught through a systematic procedure in Palo Alto, we do believe that children will probably develop the necessary

synthesizing ability. We believe that the Spelling Pocket is a powerful tool, enabling children through manual manipulation to externalize the sequential ordering of phonemes in correspondences, a subskill that is so important in blending. We think that the many opportunities that each child has to manipulate letter cards by changing letters and letter positions to read different words does facilitate the development of synthesizing abilities.

Merrill. The Merrill sequence for teaching the short *i* correspondence begins with the teacher writing the new word *bit* on the board next to the familiar word *bat*. Then the following steps occur: 1) the children read the known word; 2) the teacher pronounces and spells the new word; 3) the teacher asks the children, "What difference do you see between the word *bit* and the word *bat*?" At this point, in bold letters, the manual notes, "Be sure that pupils see the contrast in the spelling of the two words."; 4) the teacher uses *bit* in a sentence; 5) the students generate sentences containing the new word; and 6) the students pronounce and spell the word (F. A. 1.). Exactly the same procedure is followed to present four more *-it* words, always in minimum contrast with familiar words (e.g., *fit*/*fat*) (F. A. 2.).

The teacher continues the lesson by saying and spelling each word in five *s*/no *s* contrasts (e.g., *bit*/*bits*) (F. A. 3. a.). The children practice reading the new words from the board as the teacher points to them in random order (F. A. 4.), and then by reading *-it* words in sentences (F. B.). Here the manual notes, "Work toward normal stress and intonation in all reading." Finally, the children read and spell columns of *-it*/*-at* words again (F. C. 1. and F. C. 2.).

Six additional lessons are also devoted to short i patterns (i.e., in, ix, id, im, ip, and ig). These are presented one at a time, in the same manner as the it pattern was introduced, with stories interspersed between each phonics lesson, (F. D.).

The Merrill lesson is a strict adherent of the linguistic approach to reading instruction proposed by Bloomfield and Barnhardt (1961), which attempts to have children induce letter/sound correspondences by sequencing and displaying words containing similarities and contrasts in major spelling patterns. A phoneme is never isolated, nor is a spelling pattern ever produced orally. The smallest unit for pronunciation is a word.

Although the correspondence is not explicitly taught, we believe that most students in our target population, after experiencing seven lessons dealing with short i spelling patterns presented to compare and contrast with short a spelling patterns, will have acquired the i to /i/ correspondence. Our feeling that the correspondence will likely be induced is influenced by the experiences of one of the authors who has used a similar program with several "remedial" reading students. After extended practice with minimally contrasting words, she found that her "remedial" students did improve in their knowledge of letter/sound correspondences (the correspondences were tested in isolation before and after intervention). In Merrill, each lesson is structured so that words are displayed to maximize the chances of induction. There is also repetition; using the same sequence of lesson events again and again provides the extended practice we believe is vital in this type of presentation.

Although it is in an oblique way, we believe that many of the activities in the lesson do help to focus on the correspondence to be learned. For example, we believe that the spelling step that follows pronunciation of a new word is an attempt to call attention to the new grapheme. Once again, although we would much prefer to see letter/sound correspondences more directly presented, we do think children participating in these lessons will probably learn the correspondence.

We do not think, however, that from this lesson sequence, children will be able to synthesize sounds into words. The spelling step that follows pronunciation probably does touch on focusing students' attention on the left-to-right sequencing of graphemes (and inductively their phonemes). But, intuitively, we believe that this is not direct enough instruction for children who have trouble learning to read. The process of word synthesis should either be made explicit in a training strategy, as in Distar, or should be externalized, as happens in Palo Alto with the use of the Spelling Pocket. We leave Merrill then with a positive judgment regarding the learning of the i-/i/ correspondence and a negative judgment concerning the development of synthesizing ability.

A comparison of instructional strategies among the code-emphasis programs. From the preceding individual lesson summaries, the reader knows that we believe children receiving instruction from any of the four code-emphasis programs are likely to acquire the correspondences being taught. However, in compiling a preferential listing of programs for our target population, we would have to rank them according to the directness of the correspondence instruction, the most direct instruction receiving the best

ranking. Activities that we found in some of the sequences that could detract from the directness of the instruction include: word mediation in presenting the correspondence, letter-naming as a response to either the grapheme or phoneme as a stimulus, and the task of identifying pictures whose names contain the target phoneme.

Word mediation is included in Sullivan, Palo Alto, and Merrill. Distar is the only program that presents the letter/sound association directly at the point where the association is first made in the instructional sequence.

Letter-naming occurs in Sullivan, Palo Alto, and Merrill; it is ignored in Distar until second grade. In a 1975 article, Venezky evaluates evidence claiming that letter-naming learning is beneficial for word attack and word recognition development. He concludes that while letter-naming is not harmful, "A heavy emphasis on letter-name learning in either pre-reading or initial reading programs has neither logical nor experimental support" (p. 19). He continues with a statement with which we strongly concur: "What needs to be discouraged is an overemphasis of letter-name learning, especially at the expense of other essential learning experiences" (1975b, p. 20). We agree that instructional time spent in letter-naming is instructional time not spent making the correspondence explicit. However, we do not believe that any of our code-emphasis programs goes overboard in letter-name learning. In Palo Alto, using letter-names is a convenient label for the teacher as s/he directs the students to get certain letter cards for their Spelling Pocket activities. Merrill's requirement to use letter-names to spell new words seems to be an attempt to call attention to the new correspondence (it is unfortunate that this is the only way they have to do

this, given the dictum against isolating parts of a word). In Sullivan, we have noted earlier our concern that the letter-name response is too frequently requested during the teaching of the new correspondence; this may confuse the letter/sound association for students in our target population.

We would like to add some comments on the requirement that Distar, Palo Alto, and Sullivan have their students write the new letter. Several investigators have suggested that a sensory-motor task such as writing may serve to focus attention on the shape of the letter being taught (Fernald, 1943; Gillingham & Stillman, 1966; Ross, 1976). In our opinion, tasks that help a child to selectively focus attention on relevant stimuli are positive and writing of the letter may indeed help to focus such attention.

Palo Alto is the single code-emphasis program that uses the traditional task of having children identify pictures whose names contain the target phoneme of the lesson. This task will also appear later in our summaries of the basal programs' lessons. While the purpose of the task is for auditory analysis practice, in terms of decoding, we believe that Bateman evaluated the task perfectly when she noted that "circling a thousand worksheet pictures of things that start with [/i/] provides exactly zero practice in looking at [i] and responding with [/i/]" (p. 39, in press). And the ability to focus on the grapheme and produce its phoneme is precisely what we consider the objective of the lesson.

We do not mean to be too critical about this point, since we have already stated that we believe the students will learn the correspondence from

the instruction provided in all four programs. However, as we have also stated earlier, letter/sound knowledge is not enough; without the capability of synthesizing sounds into words, the learner is still unable to successfully attack words. Clearly, many children develop this capability spontaneously. But several studies have indicated that some beginning readers must be taught explicitly to blend (Haddock, 1976; Marsh & Sherman, 1970; Muller, 1973; Silberman, Note 3). These children are in trouble unless they happen to be taught using a reading program that facilitates development of this capability. Palo Alto, which provides a situation to externalize the process, does facilitate development of blending ability. But it is Distar that truly provides the missing link that will enable the learners in our target population to go from knowledge of correspondences to reading words. Distar provides a definite instructional strategy for teaching blending. (See Resnick & Beck, 1976 for an alternative blending strategy.) Unfortunately, a statement made by Beck and Mitroff in 1972 still holds true for Sullivan and Merrill: "the problem is not that the instructional strategies used to teach children to put sounds together are not working. The problem is that there is a virtual absence of <u>any</u> instructional strategy" (p. 26).

From this discussion, the reader has no doubt concluded our preferential listing of the programs on the dimensions of likelihood of letter/sound acquisition and synthesizing ability. For those who want confirmation, our ranking is: 1) Distar, 2) Palo Alto, 3) Sullivan, and 4) Merrill.

Before we turn to our lesson summaries for each basal program, we need to remind the reader that in the code-emphasis programs, for the most part,

the vocabulary that children see in their readers at any given point has been generated from the correspondences taught to that point. Basal programs, on the other hand, introduce vocabulary first as sight words and then use those words as stimuli for focusing attention on a particular correspondence.

From previous discussion, it should be quite evident that we have a strong preference for letter/sound instruction first, as opposed to sight word instruction followed by correspondence instruction using the same words. But we will not be looking at that dimension as we view our basal programs. Rather, we will be assessing whether children (who had not induced a particular correspondence from their sight word knowledge) will have gained knowledge of the correspondence from the instructional events and will therefore be able to use it to attack an unfamiliar word.

We turn now to the summaries of correspondence instruction in the basal programs.

Ginn. There are ten short i exercises provided by Ginn in the Level of that correspondence's introduction. The first Ginn lesson introduces short i by prompting the children's production of the words fish and witch with pictures (G. A. 1.), and moves to the teacher telling the students to "listen for the vowel sound in the middle of fish and witch" (G. A. 1. a.). To present the grapheme/phoneme relationship, the teacher writes fish, crib, witch, underlines the i in fish and is directed by the manual to "help children understand that this (the underlined letter) is a symbol for the vowel sound heard in fish" (G. A. 3.). Most of the remaining events in the G. A. lesson are "pure" auditory tasks. In one exercise, children determine from pairs of minimally contrasting words those that contain the "same

vowel sound...in fish" (G. A. 4.). From another set of words presented singly, children determine whether the target phoneme is at the beginning or middle of the word (G. A. 7.). The lesson concludes with children writing the letter i next to pictures whose names contain the target phoneme (G. A. 8.).

Two lessons later, the teacher introduces the "graphemic base id" through the words hid, did, lid, bid, and kid listed in a vertical column and asks the children whether "they can see anything about the words that is the same" (G. C. 2. a.). The worksheet accompanying this lesson has the children complete sentences by choosing the correct word from two id words (G. C. 4.). These procedures are repeated in the following lesson with it words and, in the next lesson it and id words are contrasted. That is, it and id words are listed in separate columns, the words are read, and the children underline the graphemic base in each list. Also in this lesson, context is used to prompt the reading of the id and it words listed on the board. Here, the teacher reads a story to the children, stopping occasionally for them to find and read the word on the board that is appropriate to the context (G. E. 4.).

In the sixth lesson (G. F.), many of the "pure" auditory activities found in G. A. are repeated, but we see in addition, more use of context. This time, the teacher tells a story and then directs the children to answer a series of questions about the story with words that "contain the unglided vowel sound heard in this" (G. F. 1.). It is not until the following lesson, in which the graphemic base im is introduced using procedures similar to the id and it lessons, that we see some attention paid to synthesis for the first time. In a task involving initial consonant

substitution, the teacher places the graphemic base card im in a card holder and the children select a consonant letter (from d, h, j, k, t), place it in front of the im, and read the resulting word (G. G. 1.).

Before the final lesson we see one more new activity. Presented with the printed word sit, children are asked to "name the vowel letter" (G. I. 1. a.), then the consonant letters. At that point, the teacher writes the label CVC above the word sit (G. I. 1. c.). Three more i CVC words are listed under sit and read, and the whole procedure is repeated for id and im words (G. I. 2. and G. I. 3.). At the conclusion of this lesson, the manual directs the teacher to "refer to the CVC pattern and explain that...when the vowel letter i is between two consonant letters, the corresponding vowel sound is usually unglided." Here, the teacher is explicitly stating a rule.

Our opinion of whether most children in our target population will have learned the i to /i/ association after having the Ginn short i sequences is no. We see that the abstract and varied ways the target phoneme is referred to is problematic. It is alternately called "the vowel sound in the middle of fish", or "the unglided vowel sound in hill", or others. When attempting to establish the grapheme/phoneme relationship, the teacher is directed to "help children understand that the underlined letter in the word fish is a symbol for the vowel sound heard in the word fish." We wonder what a teacher says and does to accomplish this direction. Since s/he is not supposed to isolate the phoneme, s/he cannot say something to the effect that the underlined letter in fish makes the sound /i/. We thought about strategies that might be used given the above constraint and could only think of the following: the teacher

could extend the i phoneme in her/his pronunciation of fish (i.e., say fiiish) and point to the i as s/he is saying the extended /iii/ in fiiish. S/he could then tell the children that the sound s/he said slowly is the sound that represents the underlined letter. We think this would help, as the extraction of a phoneme from spoken words is a difficult task for young children (Bruce, 1964; Calfee, Chapman, & Venezky, 1972; Rosner, 1973). But it is not at all evident to us that teachers are aware of the difficulty of the task; hence, we are not convinced that they would intuitively provide effective strategies for helping children focus on the target correspondence.

We believe that the Ginn developers know that analyzing spoken words for phonemes is difficult for children. We think they have provided so many "pure" auditory discrimination activities in an attempt to allay the problem. We do not believe, however, that the kind of auditory discrimination activities included in the sequence will be helpful for our target children. "Helping children understand that i is a symbol for /i/" is the whole point of the lessons under consideration, and in the Ginn sequence, the teacher is given no procedures or even clues to help decipher how to do this.

Now let's consider the instructional value of the "CVC" label and the "unglided vowel sound" labels. The Ginn lessons suggest that the teacher place the initials CVC above a list of words of the CVC pattern. We question the value of this practice for several reasons. First, while knowledge of the sound relationships of letter strings larger than graphemes is very important, it is not clear that introducing labels for those units helps to develop or organize them. We can think of no real

reason for teaching the name of the concept, except, perhaps that the CVC label used frequently will help children learn letter-class membership (i.e., vowels and consonants). But we think this class membership is best taught directly within the specific tasks that may require this knowledge (e.g., syllabication).

Using the "CVC" label and the label "unglided vowel" seems to be unnecessary terminology that is difficult to defend pedagogically. These same considerations also apply to the old-fashioned labels "long" and "short" vowel. As Carroll (1964) notes, "With regard to the actual use of phonics cues, the goal is not to have the learner acquire formally stated rules concerning letter/sound correspondences, but to teach habits of responding to letters and letter-combinations" (1964, p. 343).

To recapitulate, given the abstract, varied, and inconsistent references to the target phoneme, and the lack of concrete pedagogy for relating the grapheme to the phoneme, we think the odds are poor that children in our target population will acquire the i to /i/ association.

The one word building exercise that touches on synthesis (G. G. 1.) is insufficient for developing this ability in our target population. Actually, it is not even a good task for discriminating the new i correspondence, since the graphemic base remains constant while the initial consonant varies. It is really an exercise in consonant discrimination. Hence, Ginn fares no better in our judgment of its capacity for developing synthesizing ability than it did for teaching the correspondence.

Houghton Mifflin. As noted in Appendix H, Houghton Mifflin introduces the et phonogram during the first third of first grade. Then towards the

end of first grade the short e (for generalization to any appropriate short e word) is introduced.

The sequence of the phonogram introduction is of particular interest because in it we see the use of the Houghton Mifflin word attack strategy, which is described by the developers as a combination of partial letter/sound knowledge and context. By partial letter/sound knowledge Houghton Mifflin means that they teach most of the consonants very early in first grade and postpone vowel introduction until later. Several short vowels in phonograms receive some attention during the early part of first grade (see H. A.) but the developers do not assume that the short vowel correspondences are necessarily acquired.

We can see the Houghton Mifflin word attack strategy by examining the events in H. A. 1. The teacher writes wet on the board and reminds the students that they already know the sounds for w and t. S/he then reads an incomplete sentence (i.e., "The rain made the field too ____") and asks the students to think of a word that would make sense in the blank and that begins and ends with the w and t sounds. When the word wet is given she asks why the word soft would not be correct. The children are expected to answer that even though soft would make sense in the sentence, it does not begin with the w sound and end with the t sound. The teacher asks why the word wait would not be correct. The children are expected to answer that even though wait begins and ends with the right sounds, it would not make sense in the sentence the teacher read.

While the above word attack strategy appears only in the H. A. 1. event of the phonics lessons, it is reinforced daily during story reading

and deserves to be noted. Virtually every time the children complete a silent reading assignment (ranging from several sentences to several pages), the teacher asks the children to read aloud those words that appear in text for the first time. After each word is correctly read, she suggests another semantically plausible word (e.g., if the correct word were big, s/he suggests large) and asks why it is not right, eliciting from the children the response that the word begins and/or ends with wrong sounds. Then s/he suggests an orthographically similar word (e.g., bug), and the children are to respond that it would make no sense.

We will consider Houghton Mifflin's word attack strategy in terms of some relevant work that MacGinitie (1976) has done. He developed an analogue of a set of grapheme/phoneme correspondences (i.e., six geometric forms each with a characteristic color) and a set of lessons to parallel the steps in phonics lessons extracted from several teacher's manuals. Describing his work, MacGinitie says:

> The purpose of using the analogue lessons was to study the difficulty of the reasoning required--the difficulty of the logical steps themselves when detached from a variety of other difficulties inherent in processing the auditory and visual elements of reading...The procedure has been to pick a phonics lesson slightly in advance of where the individual child is working. We teach this phonics lesson to the child and record the particular difficulties that the child seems to have in understanding that lesson. Next we use the colors and symbols to teach an analogous lesson to the same child (p. 372).

MacGinitie goes on to discuss a lesson that closely resembles the word attack strategy used in Houghton Mifflin:

> The teacher is instructed to write the word girls on the board. The teacher then says, "You can find out what this word is. With what consonant does it begin? With what consonant does it end? You know the sounds that g and r and l and s stand for. I am going to say something and leave out this word at the end. When I stop, think of a word that

> begins with a sound g stands for, ends with the sounds r and l and s stand for and makes sense with what I said." Obviously, that instruction is rather complex for most adults, let alone most six-year-olds. The analogue for that bit of instruction was as follows: the children were shown several rows of color patches, and they were told to "Find the row that begins with the color that goes with rectangle, ends with the colors that go with triangle, diamond, and square, and that has a wavy line under it." They couldn't do that either, of course (p. 372).

We are in complete agreement with MacGinitie who has labeled this kind of lesson "absurdly difficult." If there is a saving grace to the strategy in Houghton Mifflin, it is that it is constantly reinforced. Since the teacher applies it daily, perhaps the children eventually internalize the difficult directions. However, we note that there is evidence that attention given only to first and last letters in a word results in problems with transfer (Samuels, 1971).

Let's return now to the instructional events in the short e phonics sequence (beginning with H. B.). Prior to the introduction of short e, the children have already dealt with the "long" e sound. Hence, the teacher introduces this sequence by printing a single e on the board and reminding the children that they have already learned one sound for it (H. B. 1.). The words be and me are presented, and when asked "what the sound of the e in these words is called" children are expected to answer "long e." The teacher reminds the children that long e can be easily remembered because it says its letter-name (H. B. 1. a.). Then four short e words, previously introduced as sight words, are presented and the teacher tells the students that they will learn a new sound for e. (H. B. 2.). After the children "say the words to themselves, listening for the sound the e stands for in each" (H. B. 2. a.), the teacher labels the vowel sound in

the words as the "short e sound" (H. B. 2. b.). The manual then directs the teacher to: "Pronounce the short e sound in isolation. Then have pupils say it together with you." (H. B. 2. c.). In Houghton Mifflin, only vowel phonemes are isolated; even so, this is the first time that we have seen a basal program suggest that any sound be produced in isolation.

In the rest of the events in H. B., students determine which words in various sets of printed words contain short e (H. B. 3. and H. B. 4. b.), and whether the names of certain pictures contain short e, (H. B. 4. a.).

The final event (H. D.) is quite unusual. The children turn to their readers and read a two page "article" about the long and short e. The teacher uses the same procedures s/he would use for guiding children through a story (i.e., assigns a section to be read silently, asks questions about the silent reading, and selects students to read the section aloud).

The first few sentences in the article are as follows:

Two Sounds e Can Stand For

Listen for the vowel sound in each of these words as you say it to yourself.

bed be her bear

Each of those words has the vowel e in it.
But no two of those words have the same vowel sound, do they?
The vowel e doesn't stand for just one sound.
By itself or with another vowel, it can stand for any one of many sounds.
Listen for the vowel sound in each of these words as you say it to yourself.

he tree reach

The vowel sound you hear in each of those words is the same as the name of the letter e, isn't it?

(Level F, p. 72)

We do not think most children in our target population will acquire the e to /e/ association from the instructional experience just described. From previous discussions, it should be clear to the reader that we see no logical reason for teaching that a particular letter is a short vowel, nor can we find any empirical evidence that shows knowing the label facilitates learning its sound. While the "short vowel" label for the correspondence is not presented as arbitrarily as in Ginn, it remains an unnecessary label. Having broken the dictum against isolated phoneme production for vowels and even having permitted the children to produce /e/, we wonder why the developers didn't go a little further and simply refer to the sound the e grapheme makes in this lesson as /e/.

The article "Two Sounds e Can Stand For" amazes us. First grade children who are able to read the article and follow the complex directions (e.g., "Listen for the vowel sound as you say the word to yourself") have already learned the information and certainly don't need this article. For children who are halting readers, the article is worthless. We do not believe for an instant that this kind of printed recapitulation of the sounds of e will help children in our target population learn those sounds.

Given our conclusion that children will not learn the correspondence presented in this lesson, it is a moot point to argue whether they will be able to synthesize this sound into words. Based upon the kind of instruction provided in this lesson, where there are no activities that could even vaguely be interpreted as word building, we believe that students will not develop synthesizing abilities to blend this sound or others into words.

Bank Street. The Bank Street sequence starts with a whole lesson devoted to "pure" auditory activities. First the children listen for the sound of et as the teacher reads a list of words ending in et (I. A. 1.). Then they move to determining from pairs of minimally contrasting words (e.g., bet/bit) which word contains the et sound (I. A. 2.). The teacher says, "The sound et begins with a very short sound" (I. A. 3.), goes on to read a new list of words (e.g., egg, red, Ben, wet), and asks the students if each word has the "same short sound we hear in et" (I. A. 3. b.).

In addition to continuing the same procedures, the next lesson (I. B.) makes the first grapheme/phoneme connection; that is, the teacher writes get on the board, underlines the e and tells the children, "This is the short vowel sound of get" (I. B. 1.). Then context is used to prompt the production of short e words as students answer questions posed by the teacher (e.g., the opposite of dry is wet) (I. B. 2.). In the next lesson, several lists of words previously learned as sight words are presented on the board; children read them and underline each word in the list that has "the short vowel sound...in get" (I. C. 3. and I. C. 4.).

The next two lessons contrast short e with short i (and then short e with short a) as follows: teacher writes it and get on the board and underlines the i and e. The teacher says short i and e words and lists them in the appropriate column as the children determine whether they have "the vowel sound...it, or the vowel sound...get" (I. D. 1. a.).

For the most part, the remaining seven lessons contrast short a, e, and i using the procedures just described. Within these lessons, we

do see two types of activities not yet mentioned. The first occurs in I. F. when the teacher reads several two-line rhymes and asks the children to supply the final word (e.g., "I'll yell and yell/If you don't tell"). The second new activity occurs in I. J. 2. when the teacher writes a list of CVC words on the board that have the medial vowel missing (e.g., b_g, s_t), says a word (e.g., bag), and students choose from a set of a, e, and i letter cards the one that will complete the target word. This exercise, which gets at word building, occurs only once in the 12 lessons of the short e sequence.

We are doubtful that most children in our target population will acquire the e to /e/ correspondence from the Bank Street sequence. Our conclusion for Bank Street is based upon the same reasoning involved in the negative judgments about Ginn and Houghton Mifflin since the Bank Street sequence has many features that are similar to the presentations in Ginn and Houghton Mifflin. However, our judgment about Bank Street is not quite as severe as it was with these other two basal programs, since Bank Street's sequence doesn't seem quite as distracting as Ginn's, and it provides far more repetition than is provided in Houghton Mifflin. In addition, the many activities in which the new correspondence is contrasted with short a and i provide practice in discriminating the new correspondence from previously learned correspondences.

The word building exercise (I. J. 2. a.) is in the right direction for developing synthesizing abilities in children, but since it is only presented once, we conclude that it is far from sufficient to develop this ability in students in our target population.

Open Highways. In the Open Highways instructional sequence, the short e and the long e of the vowel digraphs ee and ea are introduced simultaneously. Following several activities in which the two correspondences are compared and contrasted, the "r-controlled e" (e.g., her) is also introduced.

In the first event of the sequence, the short e and long e are contrasted as follows: The teacher writes met, bed, nest, and set in one column and eat, jeep, sheep, and leaf in another (J. A. 1.). After the word met has been read, the children are asked to tell "how many vowel letters are in it, and what the name of the letter is." The teacher then tells the children that "the letter e often stands for the vowel sound you hear in the word met." Then s/he directs the students to say met and "listen to the vowel sound" (J. A. 1. b.). The same procedure is followed with each word in the short e list. Then attention is directed to the long e words (e.g., eat). For each word, the children count the vowel letters (always two), name the vowel letters (either ee or ea), and listen for their sound as they say each word (J. A. 1. d. and J. A. 1. e.).

Attention is then returned to the short e words and the teacher asks the children to state whether the e in them is followed by a consonant or vowel (J. A. 2.). The teacher soon tells the children that "in short e words, the vowel is followed by one or more consonants" (J. A. 2. b.). The children go back to the long e words, count the vowels, and name the vowels (J. A. 3.); they are told that when the e is followed by a vowel letter it

is called the "long vowel sound of e" (J. A. 3. c.). All the above activities lead to the teacher telling the children to apply the following rules when they get to e words: 1) "If you see the vowel letter e in a word followed by one or more consonant letters, you will first try the vowel sound that you hear in red, the short sound of e" (J. A. 4.); 2) "If you see the vowel letters ee or ea in a word, you will try the vowel sound that you hear in keep, the long vowel sound of e" (J. A. 5.).

Several exercises follow in which the major activity is reading sets of words and determining whether they belong in a short e or long e category (J. B., J. C., and J. D.).

In J. E., the teacher introduces the "r-controlled e" by comparing and contrasting short e words (bed, cent) with r-controlled e words (her, perch) using the same procedures used with short and long e words. At the conclusion to the events that introduce the r-controlled e, the teacher is directed to tell the children that in a word such as her, even though r is a consonant letter, the e before it does not have the same sound as in bed. Referring to the words her and perch, she then says, "The vowel sound you hear in these words is the r-controlled sound of e" (J. E. 2. b.)

In general, the rest of the activities involve sorting lists of words according to the e category in which they belong. Toward the end of the sequence the children read words and are required to say why they used a particular sound of e (J. J.). For example, after a child has read sled, the teacher asks how s/he knew which sound to use for the e in sled. The child is expected to state the rule (i.e., the e is followed by a consonant other than r).

The Open Highways sequence is a classic example of programs that teach rules of pronunciation. We have personally seen a number of children entering remedial reading clinics who could recite numerous rules, but who could never spontaneously apply the rules to help unlock the pronunciation of a new word. To be forced to concentrate on: 1) the number of vowels in a word, 2) what kind of letter the vowel is followed by, 3) whether an r occurs after the vowel, and so forth, is far afield from seeing an e and thinking /e/, seeing an ee and thinking /ē/, or seeing an er and thinking /ûr/. We agree with Venezky who has negated the hypothesis that children apply such rules. He says, "the...hypothesis that the child generalizes from a verbalization of a rule is inconsistent with experimental data reported by Venezky and Johnson (1973) for English letter-sound patterns" (1975a, pp. 7-8).

Suffice it to say that we do not believe that children will learn the e to /e/ correspondence from this type of instruction in Open Highways, nor do we believe that they will have acquired the synthesizing skill necessary for word attack.

A comparison of instructional strategies among the meaning-emphasis programs. From the summaries of the instructional sequences in each of our basal programs, the reader can easily conclude that we do not think it likely that children in these programs will even acquire the correspondences being taught, let alone learn to synthesize sounds. Our primary criticism of the sequences is that the correspondence between letter and sound is not made as explicit as it should be. In three of the programs (Ginn, Bank Street, and Open Highways), the target phoneme is never made explicitly

available (i.e., isolated, rather than embedded in a word). When the teacher underlines the i in a word such as fish and tells the students that it stands for the "vowel sound" heard in /fish/, we have no assurance that the children are able to extract the /i/ sound and relate it to the i. When listening for the vowel sound, some children may be focusing on the /f/ or /fi/ or /ish/ or /sh/ rather than the true target. Some children may not even be listening. If the child cannot relate the vowel sound to /i/, extract /i/ from fish, and hold /i/ in memory, the rest of the activities of the lessons serve little purpose.

Indeed, there is much evidence that many five- and six-year-old children have difficulty analyzing spoken words for phonemes and other speech segments (Bruce, 1964; Calfee, Chapman, & Venezky, 1972; Rosner, 1973), even when the phoneme is made explicit. Wallach and Wallach (in press) have shown that even when the phoneme is isolated, most "poor" children (poor in the sense of low SES), have great difficulty with phoneme recognition tasks, such as determining which words start with a target phoneme (e.g., whether house or man starts with /m/). The Wallachs concluded that "some children simply couldn't do this kind of task and that extended practice didn't result in their learning how to do it either, despite the best indications regarding the child's motivation" (p. 10).

The task described by the Wallachs is far simpler than the phonemic analysis tasks required in our basal programs. The auditory activities specified in the basals are not adequate for developing those phonemic analysis abilities either. Hence, we have a vicious cycle. In order to profit from the phonics instruction in the four basal programs, a

prerequisite of sophisticated phonemic analysis abilities is required. And the children in our target population are precisely those children who do not already have these sophisticated abilities. If those phonemic analysis abilities are not there (and the Wallachs argue that they are not in many cases), the phonics instruction in the basal programs acts to little avail.

There is little to say about the development of synthesizing abilities here since we see such low odds for correspondence learning. However, we noted earlier that the few word building exercises offered in Ginn and Bank Street are in the right direction. Unfortunately, neither program uses them frequently enough to have much effect on the children with whom we are most concerned.

Summary and Conclusions

We started this paper by noting that a common characteristic of beginning reading programs that are considered successful is the inclusion of a phonics component. In these days, however, almost all beginning reading programs claim to teach more phonics and earlier phonics (and implicitly, better phonics). We have thus attempted in this study to focus on dimensions in eight commercial reading programs that show how instruction is arranged for teaching beginning readers to break the code. We arranged these dimensions into: what is taught in beginning reading instruction (i.e., the letter/sound correspondences), the sequencing of these correspondences, and how the correspondences are taught to children in the various programs.

We isolated certain sequencing dimensions that we believe affect the ease of correspondence acquisition and we compared our programs along those dimensions. Our major conclusion must be, however, that the pedagogy for teaching correspondences is the most important variable to be considered. If the pedagogy is so convoluted that the correspondences cannot be learned, or if it requires skills that young readers don't have, it matters little if the program contains exquisite sequencing.

In terms of the pedagogy of correspondence presentation, we have argued that most children in our target population will be able to learn the correspondences as they are taught in any of the code-emphasis programs (Distar, Sullivan, Palo Alto, and Merrill), and that in Distar particularly (and probably also in Palo Alto), they will learn to blend sounds into words, a skill necessary for word attack. We have also indicated our strong belief that the phonics instruction provided by the four basal programs (Ginn, Houghton Mifflin, Bank Street, and Open Highways) is inappropriate for the students in our target population. These children do not have the phonemic analysis abilities required to profit from the basals' phonics instruction. Since the basals themselves do not provide instructional experiences that teach these phonemic analysis skills, we argue that, for our children to benefit from this type of instruction, extensive training in auditory analysis skills must be provided outside of the program.[8] In our opinion, without predeveloped sophisticated

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[8]Wallach and Wallach (in press) have developed such a training program. They report favorable results on its use. Their program also includes direct instruction in letter/sound correspondences, however.

auditory analysis skills, there is no chance that most of the students with whom we are concerned will be able to extract the letter/sound generalizations and synthesizing strategies so essential for becoming independent readers. Thus, a decade after Chall (1967), along the dimensions we considered,[9] we do not see the basal programs as being essentially different from the way she described them. It is certainly true that they start phonics earlier; but since we have concluded that their brands of phonics are useless for children in our target population, these children are still receiving reading instruction from a sight method approach.

There is evidence from basic laboratory studies that there is greater positive transfer (i.e., ability to read new words) from direct letter/sound training as compared with whole-word training (Bishop, 1964; Jeffrey & Samuels, 1967). We ourselves favor the direct teaching of letter/sound associations, not only for the increased transfer abilities, but also for the initial ease of acquisition. We believe that children without sophisticated auditory analysis skills can learn to read through a code-emphasis program that explicitly teaches letter/sound correspondences and blending. Distar is such a program. It does not presuppose advanced auditory analysis skills, as it does not require the child to independently extract phonemes. Rather, direct help is provided in the program by indicating the units upon which the child should focus. The child's attention is

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[9] We are fully aware that we did not include many dimensions that are factors that may influence how a child learns (e.g., topics of stories, quality of stories, attractiveness of the reading materials). We do wish to point out that those adults who worked on this study found that two of the basals (Ginn and Houghton Mifflin) had superior stories. However, we must be hard-headed on this issue and consider that the child who can't read the stories will never know how delightful they are.

directed to the grapheme and the phoneme is sounded; s/he need not discover the relationship independently. Furthermore, a natural feedback system is inherent in the process. Since phonemes occur in the environment of other phonemes rather than in isolation, the child can test his/her verbal production (the result of blending) against what "sounds right." For example, having blended /k/ /a/ /t/ to produce cat, s/he can test to see whether s/he has pronounced a word that is in his/her aural vocabulary. Indeed, we view this kind of decoding instruction as an excellent way of developing phonemic analysis abilities.

Considering the eight programs in their entirety according to the dimensions studied in this paper, we consider Distar to be the program most effective in teaching beginning reading skills to our target population.[10] The other code-emphasis programs (Palo Alto, Sullivan, and Merrill) are also probably reasonably effective, but we have not considered their efficiency in rendering this opinion. It probably takes Merrill far longer in terms of instructional time spent and repetition to achieve the same end that Distar does through its direct instruction.

Thus, our definition of what constitutes a successful reading program is far more explicit than just those programs that contain a phonics component. Based upon the analyses in this paper, we would like to present a direct instruction model for presenting beginning reading content, parallel

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[10] Distar was the only one of our eight programs for which we were able to obtain achievement results. Anderson (1977) reports positive achievement results with the kind of students in our target population. It should be noted, however, that our analyses were not influenced by achievement results. All the analyses presented here stand independent of external findings.

in some respects and complementary to the direct instruction model discussed by Barak Rosenshine (1976) in his review of variables observed in classroom instruction that impact positively on the achievement in reading and mathematics of primary grades students of low socioeconomic status. Rosenshine concluded from the results of three major studies that direct instruction, consisting of such observable classroom behaviors as supervised lesson and workbook activities, little free time, academic commands and direct teacher questioning, facilitates academic learning by children of low socioeconomic status.

We would like to present our direct instruction model based solely upon the content, sequencing, and pedagogy contained in beginning reading programs, not upon classroom observations. Our model for successful reading programs contains these elements: 1) direct letter/sound correspondence instruction, i.e., instruction that explicitly makes letter/sound relationships obvious to children; 2) a definite instructional strategy for teaching blending, i.e., a strategy that teaches children how to synthesize sounds into words; and 3) repeated opportunities to apply learned correspondences and blending to the reading of words in connected text. We believe that facility in word recognition will be developed through repeated exposure to the same words in different texts. As for the delicate balancing involved in sequencing letter/sound correspondences, we would like to see correspondences thoughtfully arranged in as nonconfusing, noncompetitive a sequence as possible, given the difficulty and interrelationship of the task.

While the source of the direct instruction model we are specifying is different from that elaborated by Rosenshine (i.e., our comes from analysis of content, sequencing, and pedagogy; Rosenshine's from classroom observation), we speculate that it is exactly the same kind of children who would benefit from our model as were those who showed positive achievement results from the one he presented. We believe that these are the children who most probably will not infer letter/sound relationships if they are presented solely in an environment where the children must discover them for themselves. For these children, at least, we must teach the relationships explicitly.

We fear that it is not currently in vogue to make this kind of remark, since we sense that educationalists' legitimate concern for the development of creativity and the enhancement of interest in learning has resulted in interpreting structure as being uninteresting, unpleasant, and rigid. But we believe this to be a false conclusion. Structured, direct teaching does not have to be bitter medicine. Success in early reading is critical for the students in our target population and we believe that using a model of direct instruction in beginning reading could give students this success.

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APPENDIX A

Procedures Used to Transform Content Units to Relative Proportion of Time Spent in those Units for the First Two Grades

The scope of our analysis involves the time span from first through second grade. We determined the grade coverage of the Books and Levels of each program on the basis of information provided by the publishers and our own interpretation of the amount of material our target population was likely to cover. Since excluding "reading readiness" components from our analysis omitted no important first grade content, we started with what each program considers the first book to be used in first grade. (Houghton Mifflin was an exception; we did include its readiness component because the program's decoding strategy was extensively used in those materials.)

Publisher statements usually specified which of the content units were to be used in each grade. However, in the absence of direct publisher statements for each program concerning exactly how long it should take to complete each content unit within each of the two grades, we apportioned the content to be covered during each school year by adding the number of pages in the students' readers and workbooks for each content unit in each program. We took this measure of length of content to be covered as one way of representing the relative proportion of instructional time that would be spent in each content unit.

Sullivan, Palo Alto, and Merrill divide their content into fairly equivalent units across the two grades. Open Highways has three approximately

equal units within first grade and two equal units in second grade. The four remaining programs, Distar, Ginn, Houghton Mifflin, and Bank Street, do not present consistent numbers of pages in each content unit. The discussion that follows shows how we allocated the grade coverage for all eight programs and includes tables that summarize the number of pages the latter four programs provide in each content unit.

Distar. From program materials, we learned that all work and story reading done by the students is presented exclusively on Take-Home Sheets (workbook pages) during the first 92 lessons (out of 160 total in first grade). Publisher statements tell us that approximately one new lesson is presented each day and each lesson entails the use of two pages. We have thus represented the 184 pages of Take-Home Sheets on Figure 1 as taking the first half of first grade to complete.

Three storybooks are covered through the second half of first grade in addition to continuing Take-Home Sheets. Each of these storybooks plus its related Take-Home Sheets contains approximately the same number of pages. Therefore, during the second half of the first grade, the three storybooks have been allotted equal space on Figure 1.

Within the Distar II second grade materials, the number of pages contained in each of the four storybooks and the corresponding Take-Home Sheets is approximately equal, and as such, the four books have been given an equal allocation of space within second grade on Figure 1.

As shown in Table A, it is important to note that the total number of pages covered in the second half of first grade is almost twice that covered in the first half. Also, each storybook/workbook unit in second

grade has almost twice the amount of material contained in each book used during the latter half of the first grade.

Table A

Total Number of Pages Contained in the Readers and Workbooks Used Through the Second Grade in the Distar Program

	Take-Home Sheets	Distar Storybooks						
		1	2	3	1	2	3	4
Total pages (Readers and Workbooks)	184	116	104	108	197	192	190	202

Sullivan. Sullivan provides Programmed Reading Books, each with exactly equal numbers of pages. These Books are used in the program as both readers and workbooks. There are eight Books provided for each grade (including the Primer indicated by "P" on Figure 1); each book has been given equal space on the Sullivan time line to reflect what we are assuming would be equal time spent using each of the 16 books.

Palo Alto. The Publisher reports that an approximate first grade coverage in the Palo Alto program is Books 1-6. These Books are nearly equivalent in length and, hence, they represent equivalent proportions of first grade instructional time as depicted on the Palo Alto time line in Figure 1. The Publisher expects Books 7-13 to be completed in second grade. Considering our target students and our sense of their probable rates of progress through the Palo Alto Books, we believed Books 7-12 to be a more

realistic estimate of content covered in the second grade. Here, again, the Books are of approximately equal length and are apportioned equally on Figure 1.

Merrill. The Publisher expects that a total of six books and workbooks will be covered through second grade--three in first grade and three in second. Merrill's six sets of readers and workbooks increase slightly in length over the two years (second grade books and workbooks are each about 30 pages longer than first grade books and workbooks), but not significantly enough to reflect unequal space allocations on Figure 1. Thus, Figure 1 shows equal space allotted to each of Merrill's six units of content in the two grades.

Ginn. The four Levels of Ginn to be used within the first grade are not of uniform length. Level 5, the last book in first grade contains more than twice as many pages as are contained in either Levels 2, 3, or 4. Levels 6 and 7, covered in the second grade, are of the same length. Space on Ginn's time line in Figure 1 has been apportioned on the basis of the total number of pages in each content unit as shown below on Table B.

Table B

Total Number of Pages Contained in the Readers and Workbooks Used Through the Second Grade in the Ginn Program

	Ginn Levels					
	2	3	4	5	6	7
Total pages (Readers and Workbooks)	92	119	119	298	364	360

Houghton Mifflin. Houghton Mifflin's "reading readiness" component, Level A, was the only readiness component included in this analysis. We thought it proper to include Level A because we believe that Houghton Mifflin's word attack strategy begins to be taught extensively in this component.

The length of Houghton Mifflin's Levels differs substantially within first grade. For instance, the last content unit, Level F, is 368 pages, or three times longer than Level B; it is accorded three times the space on Figure 1. Within the second grade, however, the two books are only 32 pages different in length, so we show equal apportionment for these two units on Figure 1. Space for the first grade section of the Houghton Mifflin time line was allocated on the basis of the page totals shown below.

Table C

Total Number of Pages Contained in the Readers and Workbooks Used Through Second Grade in the Houghton Mifflin Program

	Houghton Mifflin Levels							
	A	B	C	D	E	F	G	H
Total pages (Readers and Workbooks)	224	118	112	138	320	368	392	424

Bank Street. Like Houghton Mifflin, the Levels Bank Street provides for the second grade are of approximately equal page length. We allotted them the same amount of space on Figure 1. Bank Street's first grade units

are also similar to Houghton Mifflin's in that the last Level is more than three times the length of the first. The first grade time line is divided accordingly on Figure 1. We based our divisions on the page totals shown in Table D.

Table D

Total Number of Pages Contained in the Readers and Workbooks Used Through Second Grade in the Bank Street Program

	Bank Street Levels					
	1	2	3	4	5	6
Total pages (Readers and Workbooks)	96	128	255	317	381	379

Open Highways. Open Highways increases the length of its readers and workbooks only slightly and very slowly over the two years. There are three books/workbooks offered for the first grade that are similar in total number of pages; they have been allocated equal space on Figure 1. The two books/workbooks for second grade have also been apportioned equally since they also contain approximately equal numbers of pages.

APPENDIX B

Procedures Used to Derive the Sequence of Letter/Sound Correspondences Presented in Each Program Through Second Grade

Eight sequence charts, one for each program, were constructed on the basis of the following guidelines:

Distar. Distar specifically lists certain correspondences that it teaches. However, many more correspondences than are contained in the explicit teaching instances are implied through the use of Distar's special orthography. For example, once the child has been explicitly taught the sound of long a (represented in the Distar orthography as $\bar{a}$), he or she can read the correspondences contained in a number of different grapheme configurations since the Distar orthography also reduces the size of silent letters to indicate to the child that these letters are not pronounced. Thus, after the child has learned the /$\bar{a}$/ sound for $\bar{a}$, words containing aCe, ay, and ai (e.g., make, day, rain) begin to appear in vocabulary listings and stories. We counted all such instances as correspondences that were learned, but differentiated this situation in the table that follows by indicating with a dot those correspondences that were taken care of by the special orthography.

Sullivan. Sullivan explicitly lists in lesson headings the grapheme/phoneme correspondences they expect children to learn in a particular lesson. No interpretation was necessary for constructing the Sullivan sequence chart, as we extracted and listed this information just as Sullivan presents it.

Palo Alto. The Palo Alto program listed the correspondences to be taught at the beginning of each new Book division in the teacher's manuals. We found no occasion to add, delete, or rearrange correspondences from their supplied listings.

Merrill. Extracting the correspondence sequence for Merrill required a certain amount of interpretation. Merrill presents its correspondence sequence embedded in spelling patterns. It introduces a spelling pattern and then changes the pattern by substituting different elements. For example, the program starts with the CVC pattern and the first word taught is cat; we have therefore assumed that the child has learned the c-/k/, a-/a/, and t-/t/ correspondences. Since the second word taught is fat, we added the f-/f/ correspondence to our listing, and so on. The vocabulary used with spelling patterns is rigidly controlled making it easy for us to spot new correspondences as they appeared in spelling patterns.

A more difficult decision for sequencing correspondences in Merrill was how to treat vocabulary words they term "Applications of Patterning." These are words that are based on the pattern of previously taught sight words, new tense forms of known words, contractions, and combinations of words of known patterns. For example, if the program had taught look as a sight word, it might teach cook in a later story as an "application of patterning." We handled this decision in one of two ways: first, if the new correspondence appearing in this "application of patterning" instance was specifically taught at a later point, we deferred including it in our sequence until then. If the correspondence was not included anywhere else within the first two grades of the program, we considered it taught as a correspondence at the point where it was included in a word as an "application of patterning."

Ginn. Ginn explicitly lists the correspondences to be taught. We found no occasion to change the correspondence sequence as supplied by Ginn program materials.

Houghton Mifflin and Bank Street. These two programs also list the correspondences taught in lesson headings contained in the program materials. Occasionally, however, Houghton Mifflin uses sample words to explicitly teach certain "rules" (e.g., that consonants are doubled before adding ing). We extracted the correspondences from these sample words that we thought were being taught in these instances and added them to Houghton Mifflin's correspondence sequence.

Houghton Mifflin and Bank Street also use vowels in phonograms long before they teach the vowel sounds as such. On the correspondence sequence charts, we listed the vowels at the place where they first appear and are used in phonograms.

In some instances, Bank Street teaches auditory discrimination of certain sounds a lesson or two before the sounds are associated with their printed form. In these instances, we sequenced the correspondence as being taught at the place where the symbol/sound association is made.

Open Highways. The Open Highways sequence of correspondences was amorphous in its presentation. We had to read the teacher's manuals closely to determine where students were expected to be able to associate letters with their sounds (correspondences would sometimes be presented with no expectation that they be learned at that point). We sequenced the correspondences at the place where students are expected to have learned the correspondence and can use it in decoding words.

The eight sequence charts constructed using the procedures described thus far in this appendix were far too unwieldy for inclusion in this document as such. We sought a way for most of the "meat" of each chart to be included in one comprehensive listing. Table E is the result of our deliberation on this point. Table E shows the correspondences that are presented in each program (according to 12 categories) and gives an approximate designation of where in the sequence of instruction each correspondence is presented. A listing of 1.1 on Table E means that a particular correspondence is taught in the first half of first grade in a program; a notation of 1.2 means the correspondence is taught in the second half of first grade. A 2.1 denotes instruction of a correspondence in the first half of second grade and a 2.2 means it is introduced in the second half of second grade. For example, in the short vowel category of Table E, we can see that the first entry, a as used in the word man, is introduced in the Distar, Sullivan, Palo Alto, Merrill, and Houghton Mifflin programs in the first half of first grade. It is introduced in Ginn, Bank Street, and Open Highways in the second half of first grade. A blank in any of the columns indicates that the correspondence was not taught in that program through second grade.

TABLE E

Letter/Sound Correspondences Presented and Place of Their Introduction In Each of the Eight Programs

SHORT VOWELS		Dieter	Sullivan	Palo Alto	Merrill	Ginn	Houghton Mifflin	Bank Street	Open Highways
a	m**a**n	1.1	1.1	1.1	1.1	1.2	1.1 +	1.2 +	1.2
e	g**e**t	1.2	1.1	1.2	1.2	1.2	1.1 +	1.2 +	1.2
i	s**i**t	1.1	1.1	1.1	1.1	1.1	1.1 +	1.2 +	1.2
o	**o**ut	1.1	2.1	1.1	1.2	2.1	1.1 +	1.2	1.2
u	c**u**p	1.1	1.2	1.1	1.2	2.1	1.1	1.2	1.2
LONG VOWELS									
a–e	m**a**d**e**	1.1 *	2.1	2.1	2.2	1.2	1.2 +	1.2 +	1.2
i–e	n**i**c**e**	1.2 *	2.1	2.1	2.2	1.1	1.2 +	1.2	1.2
o–e	h**o**p**e**	1.2 *	2.1	2.1	2.2	2.1		1.2	1.2
u–e	t**u**n**e**	1.2 *	2.1	2.1	2.2		1.2	1.2	1.2
e	b**e**	1.1	1.2	2.1		1.2	1.2	1.2	
o	m**o**st	1.2	2.1	2.2		2.1	1.2	1.2	
e–e	th**e**s**e**	1.1 *	2.1	2.1	2.2				
u	tr**u**th	1.2	2.1				1.2		
i	**i**cicle	1.2	2.1						
a	**a**pron	1.1	2.1						
u	**u**nited		2.1				1.2		
VOWEL DIGRAPHS & DIPHTHONGS									
ea	m**ea**m	1.1 *	2.2	2.1	2.2	1.2	1.2	2.1	1.2
ay	s**ay**	1.1 *	1.2		2.1	1.2	1.1	2.1	2.1
ea	s**ea**t	1.1 *	2.2		2.2	1.2	2.1	2.1	1.2
oo	b**oo**k		2.2	2.2	1.2	2.1	1.2	1.2 +	
ai	r**ai**n	1.1 *			2.2	2.2	1.2	2.1	2.1
ou	**ou**t	2.1	2.2			2.2	2.2	2.1	
oo	m**oo**n	1.2		2.2		2.1	1.2	2.2	
ow	sn**ow**	1.2 *	2.1			2.2	1.1	2.1	
oa	b**oa**t	1.2 *				2.2	1.2	2.1	2.1
ew	s**ew**		2.2			2.1	1.1		2.2
ow	c**ow**					2.2	1.1	2.1	
oy	b**oy**		2.2				1.2	2.1	
ew	f**ew**		2.2				1.1		
ue	gl**ue**		2.1						2.1
oi	p**oi**nt						1.2	2.1	
ie	p**ie**						2.1		2.1
oe	d**oe**								2.1
au	p**au**se						2.1		
ou	y**ou**						2.2		
ou	c**ou**ntry						2.2		
ou	w**ou**ld						2.2		
ou	br**ou**ght						2.2		
ea	h**ea**d							2.2	

* Handled through special orthography. Also note: ss and ss are handled first through special orthography, then taught specifically in second grade.

\+ These vowels appear first in phonograms; later they are dealt with specifically. We indicate the time of their first appearance.

R & L CONTROLLED VOWELS

		Dister	Sullivan	Palo Alto	Merrill	Ginn	Houghton Mifflin	Bank Street	Open Highways
al	ball	2.1	1.2	1.1	2.2	2.1	1.2	1.2	2.2
ar	car	2.1	1.2		2.2	2.1	2.1	2.1 +	1.2
er	her	1.2	1.2		2.1	2.2	1.2	2.1	1.2
or	corn		2.1			2.2	2.1	2.1	1.2
ur	fur		2.1			2.2	2.2	2.1	1.2
ir	girl		1.2			2.2	2.2	2.1	1.2
or	work		2.2			2.2	2.1		
ore	more		2.1	2.2					
are	bare			2.2					
oor	door		2.1						
ure	cure						2.2		
our	pour						2.2		
ear	earn					2.2			

SINGLE CONSONANTS

b	bat	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
l	lap	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
r	ran	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
h	hat	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
j	jam	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.1
c	cat	1.1	1.1	1.2	1.1	1.1	1.1	1.2	1.1
f	fan	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
y	yard	1.1	1.2	1.2	1.2	1.1	1.1	1.2	1.1
n	not	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
d	did	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
qu	quite	1.2	2.1	1.2	2.2	1.2	1.2	2.1	1.2
t	tap	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
v	van	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.1
m	man	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
s	sit	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
w	wag	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
p	pat	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.1
z	zip	1.2	2.1	1.1	1.1	1.2	1.1	2.1	1.1
g	gun	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
k	kiss	1.2	1.1	1.1	1.2	1.1	1.1	1.2	1.1
x	six	1.2	1.2	1.2	1.1	1.2	1.2	2.1	1.2
s	his		1.1		1.1	1.2	2.2	2.1	1.2
c	city		2.1			2.1	1.1	2.1	1.1
g	giant		2.1			2.2	1.2	2.1	1.2
s	sugar		2.2				2.2		

DOUBLE CONSONANTS

		Dister	Sullivan	Palo Alto	Merrill	Ginn	Houghton Mifflin	Bank Street	Open Highways
ll	bell	1.1 *	1.1	1.2	1.2	1.2			1.2
ff	stiff	1.1 *	1.1	1.2	2.1	1.2			1.2
tt	kitten	1.1 *	1.1		2.1		1.2	2.1	2.1
ss	miss	1.1 *	1.1	1.2	1.2	1.2			
gg	egg	1.1 *		1.2	2.1		1.2	2.1	
pp	ripped	1.2 *	1.1		2.1		1.2		2.2
dd	add	1.1 *		1.2	2.1				2.2
nn	Ann	1.1 *	1.1				1.2	2.1	
zz	buzz	1.2 *	2.1	1.2					
mm	humming	1.1 *			2.1			2.1	
bb	rubbed	1.2 *			2.1				

INITIAL CONSONANT CLUSTERS

sl	slap	1.2	1.1	1.2	2.1	2.2	1.2	1.2	1.1
br	bring	1.2	1.1	1.2	2.2	2.2	1.2	1.2	1.1
st	stand	1.2	1.1	1.2	2.1	1.2	1.1	1.2	
tr	track	1.2	1.1	1.2	2.2	1.2	1.1	1.2	
bl	black		1.1	1.2	2.1	2.1	1.2	2.1	1.1
fl	flap	1.2	1.2	1.2	2.1	2.2	1.1	2.1	
cr	cry	1.2	1.1	1.2	2.2	2.2	1.2	2.1	
sw	swim	1.2	1.2	1.2	2.2		2.1	2.2	
wh	wheel	1.2	1.2	2.2		1.2	1.1	1.2	
fr	fry		1.2	1.2	2.2	1.2	1.1	1.2	
sm	smell	1.2	1.2	1.2		2.2	1.1	2.1	
cl	clap		1.2	1.2	2.1	2.2	1.2	2.1	
dr	drop		1.1	1.2	2.2	2.2	1.2	2.1	
pl	plan			1.2	2.1	2.1	1.1	1.2	
gr	grass		1.1	1.2		1.2	1.2	2.1	
sk	skate		1.1		2.2	2.2	1.2	1.2	
gl	glad		1.1	1.2		2.2	1.2	2.1	
sn	snap		1.1	1.2			1.2	2.1	1.1
sp	spill		1.1	1.2	2.1		1.2	2.1	
tw	twin		1.2	1.2	2.2		2.1		
pr	print		1.1		2.2		1.2	2.1	
str	string		1.2	1.2			1.2	2.2	
sc	scab			1.2			1.1	2.2	
scr	scratch		1.1	1.2					
spl	splash		1.1	1.2					
spr	spring		1.2				1.2		
thr	three						1.2		
squ	squeak						1.2		

FINAL CONSONANT CLUSTERS

		Distar	Sullivan	Palo Alto	Merrill	Ginn	Houghton Mifflin	Bank Street	Open Highways
st	fast	1.2	1.1	1.2	2.1	1.2	1.1	2.1	
nd	and		1.1	1.2	2.1	2.1		2.2	
ng	rang	1.2	1.1	2.2	2.1			2.1	
nk	pink		1.1	2.2	2.1		1.2	2.1	
nt	bent			1.2	2.1	2.1		2.1	
sk	mask		1.2	1.2	2.1	2.2			
tch	patch		1.1	2.2	1.2	2.1			
mp	camp		1.2	1.2	2.1				
ld	hold			1.2	2.1	2.2			
lp	help		1.2	1.2	2.1				
lk	milk		1.1	1.2	2.1				
lt	melt		1.2	1.2	2.1				
ft	left		1.2	1.2	2.1				
pt	kept		1.2	1.2	2.1				
sp	crisp			1.2	2.2				
ct	act		1.2	1.2					
xt	next			1.2	2.1				
lf	self		1.2		2.1				
nch	lunch				1.2				

INITIAL CONSONANT DIGRAPHS

sh	ship	1.1	1.1	2.2	2.1	1.2	1.1	2.1	1.1
ch	chin	1.2	1.1	2.2	1.2	2.1	1.1	2.1	1.1
th	thank		1.1	2.2	1.2	1.2	1.1	2.2	1.1
th	that	1.1	1.1	2.2	1.2	1.2		1.2	
kn	knock		2.2			2.2	2.2	2.2	
wh	who		2.2						
ch	Christmas		2.2						
ph	phone		2.2						
wr	write						2.2		

FINAL CONSONANT DIGRAPHS

ck	back	1.1*	1.1	2.2	1.2	1.1	1.1	2.1	1.2
ch	peach	1.2		2.2	1.2	2.1	1.1	2.1	1.1
sh	fish	1.1	1.1	2.2	2.1		1.1	2.1	1.1
th	path			2.2	1.2	1.2	1.1	2.1	1.1

VOWEL VARIANTS

e	live		1.2					1.2	
o	do			2.2					
o	mother		2.2						
u	pull		2.2						
o	soft		2.2						
o	move		2.2						
a	water		2.1						

OTHER		Distar	Sullivan	Palo Alto	Merrill	Ginn	Houghton Mifflin	Bank Street	Open Highways
y	cry	1.2	1.2		1.2		1.1	2.1	2.2
y	penny		2.1		2.1	2.2		2.1	
igh	night		2.2				1.2	1.2	
mb	lamb		2.2			2.2			
ture	nature		2.2				2.2		
tion	nation		2.2						
sion	mission		2.2						
ion	million		2.2						
t	whistle		2.2						
w	answer		2.2						
el	nickel		2.1						
le	apple		2.1						
ig	sign		2.2						
alk	walk		1.2						
dge	fudge						1.2		

APPENDIX C

An Abstracted Description of the Sequence for Teaching Short *i* in Lessons 34 thru 38 of the Distar Reading Program.

This appendix contains an abstracted version of 15 short *i* exercises presented in five lessons of Distar Reading I. Only new teaching strategies are described, in the order of their first appearance; strategies used in preceding exercises are referenced to those exercises.

These 15 short *i* exercises do not all occur one after another. Instead, they are interspersed with other reading skills activities (such as learning to read sounds in left-to-right order), and workbook practice. The exercises that are consecutive (no other skills are dealt with in between) are:

Exercises A. through C. in Lesson 34
Exercises D. through G. in Lesson 35
Exercises L. and M. in Lessons 37 and 38
Exercises O. and P. in Lesson 38

Exercises H., I., J., and K. appear as maintenance exercises within separate lessons.

A. "Children say the sounds in *is*."[1]

1. Teacher tells group they will say the sounds in the word *is*. (She/he presents the word orally, not in printed form.) Teacher signals (holding up her/his hand and dropping it) and the children say /iiisss/ without pausing between sounds. This step is repeated until established. Then the children say the whole word *is*.

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[1] All text on pages 92 to 95 is exerpted from the Teacher's Guide of Distar Reading I.

B. "Teaching i as in if."

1. Teacher points to large printed i saying, "Here's a new sound."

2. Teacher touches i and says /i/. Repeats sound, exaggerating it /iii/.

3. Teacher tells students to say the sound when s/he points to the letter.

    a. Repeats 3. until all children respond /i/ in unison when, and only when teacher points to the i.

    b. Teacher asks individuals to say sound when s/he points to letter.

(Note: For each step in a Distar lesson the children first respond in unison, then the teacher asks each child to respond individually. In subsequent steps we will use the notation "children/child" to point this out.)

4. Teacher reviews i sound by having children/child alternately say the sounds for i and a selection of previously learned correspondences (i.e., f, a, and ē.)

5. Teacher again points to i and asks for the sound. Repeats until "firm," (meaning that the response is well established).

6. Teacher follows same procedure as in 4., this time with a larger set of previously learned correspondences and the i.

C. "Oral blending--say it fast."

1. Teacher says the sounds /iiisss/ slowly then asks the students to "say it fast" (i.e., students are to collapse the extended sounds they hear into the word and say is).

    a. Teacher repeats with this and runs.

D. "Children say the sounds in if."

1. Teacher tells the students they will say the sounds in if, then has them repeat the word to make sure they know it.

    a. Children say /iiifff/ without pausing between phonemes. Teacher uses hand signals to indicate when to start first sound, when to go to second sound.

    b. "When /iiifff/ is firm" teacher tells group to "say it fast." At hand signal they are to say if.

E. Procedures in exercise D. are repeated with the word sit.

F. Teacher repeats the procedures listed in exercise B.

G. Game-like review in which teacher crosses out symbols on presentation page as children name sounds (m, a, s, i, f, e, r, d).

H. Children work on their Take-Home Sheets.

1. Children cross out all i letters from a group of various symbols.

2. Children see letters, say sound, write the letter.

3. Children match i letters from among one column of six letters, to i letters in a parallel column of the same letters.

(Note: Review lesson available at this point for children who require more practice.)

I. Teacher repeats procedures in exercise B.

J. "Children rhyme with ing."

1. Teacher tells children they will make words which rhyme with ing.

   a. Teacher touches m (first sound) and has the children say the sound, then blend it with ing (ming).

   b. Repeats with r and s.

K. Teacher repeats procedures in exercise G.

L. Children repeat exercises similar to those in H. in their workbooks.

M. Repeat J., rhyming r, s, and d with ing.

N. Procedures in exercise D. are repeated with the word is.

O. Children read the word if. (The word is presented on an arrow that points from left to right.)

1. Teacher follows arrow with her finger, telling students to say each sound as she comes to it. Students first say the sounds in an extended manner /iiifff/ and then say the sounds fast (i.e., say them as a word rather than as two drawn out sounds.) The teacher asks what the word they have read is, and confirms the answer by saying "Yes, if."

P. Children repeat exercises similar to those in H. in their workbooks.

APPENDIX D

An Abstracted Description of the Short e Exercises in Level 2 of Sullivan

This appendix contains an abstracted version of the short e sequence as it is taught in Book 2 of Sullivan. This sequence is broken by one lesson (teaching the final consonant cluster nk and new words) that takes place between B. and C. below. Exercises A. and B. are taught in one lesson, exercise C. in the final lesson. The final lesson is followed by a number of pages in the Programmed Readers that emphasize the newly-learned short e sound through words and exercises.

A. "Decoding the sound-symbol relationship e = /e/ as in egg." [1]

1. Teacher points to e on a card and has students identify the letter e by name.
2. Teacher explains that the sound of e is /e/ as in egg.
   a. Students repeat the sound /e/ and the word egg several times.
   b. Teacher points out that the first letter of egg is e and the first sound of egg is /e/.
3. Teacher asks students for the sounds of letters a and i, then for the sound of letter e again.
   a. Asks for examples of words beginning with the sound /a/, then /i/, and /e/.
4. Teacher writes bit, bad, bat, bid, bet, bad on the board.
   a. Helps students "sound out words."
   b. Points to each vowel letter and asks one student to name it and give its sound.

[1] All text on pages 96 to 98 is exerpted from the Teacher's Guide for Book 2 of Programmed Reading.

B. "Listening for the sound of e"

1. Teacher reads twelve pairs of words (e.g., pin/pen, sand/sent) telling the students that one word in each pair "will contain the sound of e, and that the other will contain the sound of a or of i."

    a. Has one student identify the word from the pair that has the "sound of e"; has another student tell which vowel letter is contained in the other word.

C. "New words with short e." (red, bed, dress, best)

1. Teacher holds up word-picture card for bed and asks a student to identify the picture.

    a. Points to the word bed and calls on another student to spell it.

    b. Asks that student to give sound of the letter e and say the word bed.

2. Repeat C. 1. for dress.

3. Teacher writes words bed, red, dress, best on the board and a set of sentences containing the new words, but in which the e has been left blank.

    a. Points to bed and has a student read it. Points to red and tells student that "this word rhymes with bed...but starts with a different sound." Has a volunteer read the word.

    b. Points to dress; has student read and spell it.

    c. Points to best and calls attention to the first two letters - they are the same as in bed. Has a student find the word that has the same first letters, then asks him/her to give the sound of b and e. (Has another student give sound of the letters st.) Teacher says the word "fast" as a clue to prompt the students. Then has one read best.

    d. Points to the four new words in random order, asking a student to read and spell each one. Has another student use them in sentences.

4. "At the Board: Sentences"

    a. Teacher writes ant, in, and bed beside the sentences (from C. 3.) and calls on a student to give the sounds of a, i, and e.

    b. Teacher reads each sentence, using the appropriate new word in the blank (e.g., Sam's bed is r_d.).

c. After reading each sentence, teacher calls on a student to repeat the sentence and fill in the blank with a, i, or e. Manual notes: "If the student has any difficulty, first say the word with the blank for him, then isolate the vowel sound and ask him to name the letter that has the sound."

D. Following the introductory lessons, there are several pages in the Programmed Reader that emphasize short e words.

1. An exercise, for example, might require the student to fill in the missing e in the word red. (Note: previously learned content is maintained and practiced at the same time.)

APPENDIX E

An Abstracted Description of the Sequence for Teaching Short *i* in Book 2 of Palo Alto

This appendix contains an abstracted version of the short *i* sequence as it is taught in Book 2 of Palo Alto. The sequence is continuous; it is not broken up into lessons with intervening activities. The material that follows would be done in order, although not necessarily completed in one day of instruction.

We have made a demarcation (as noted by the letters A. through E.) when the objective of the sequence changes. The objective is quoted after the letter.

Following is the description of the short *i* sequence:

A. "Listening to and saying beginning /i/ sound as in *it*."[1]

1. Teacher tells children to "listen to the sound that begins the words *in*, *imp*, *igloo*."
    a. Teacher tells children "they (above words) all begin with the sound of /i/ as in *it*."
2. On worksheet children draw rings around pictures whose names begin with the /i/ sound as in *it*.

B. "Introducing *i* as seen in print."

1. Teacher places letter *i* card in pocket chart, says words beginning with /i/ sound, discusses shape of *i*.
2. Children say appropriate letter name as teacher holds up letter cards *i*, *l*, *o*, *v*.

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[1]All the text on pages 99 to 102 is exerpted from the Teacher's Guide for Book 2 of the Palo Alto Reading Program.

3. Teacher gives children their own i cards and tells them to get their a, t, s, n, o cards. (Every child gets each letter in both upper and lower case after it has been introduced.)

    a. Teacher says a word (e.g., in). Children locate from the six letter cards the letter with which the word begins. Fourteen words are suggested. (six i words, other eight words begin with sounds represented by the other five letter cards above)

4. On worksheet children draw rings around each i found in rows of single letters and ring the two and three letter words that begin with i.

C. "Introducing the writing of i."

1. Teacher writes i on chalkboard and discusses its shape (e.g., straight line with a little dot on top).

2. Children practice writing i's on paper.

3. On worksheet children trace broken line i's, then write i under each i found in a row.

D. "Recognizing the writing of Capital I."

(Same procedures described in C. above for lower case i are followed for upper case I.)

E. "Listening to and saying the /i/ sound as in sit."

1. Teacher asks children to listen for the middle sound as she/he says sit, hit, lit, bit.

    a. Teacher tells children that "the sound in the middle is /i/ and is spelled by the letter i."

2. Teacher says a word containing /i/.

    a. Children demonstrate that they know whether the /i/ sound is at the beginning or in the middle of the word by placing their i card at the beginning or middle of their spelling pockets. (Five words begin with i, eight words contain medial i's.)

3. Teacher places letter s and t in pocket chart and puts a between them. Students read sat.

    a. Teacher replaces a with i. Children read sit.

    b. Same procedure as above used with seven other word pairs. (e.g., ham/him, ram/rim)

4. Children place h and m (with a space between the consonants) in their spelling pockets.

    a. Teacher says ham, children place a in pocket.

    b. Teacher says him, children place i in pocket.

    c. Same procedure as above followed for six other a, i contrast pairs. Before each pair teacher tells children which beginning and ending consonants to place in chart (e.g., b, t, f).

5. Children place am in spelling pockets. Teacher says "I shall dictate some rhyming words. You put the beginning sound for each word in the spelling pocket as I say it." Teacher says ram. Children place r in front of am.

    a. Initial consonant substitution continues for five other words.

6. On a worksheet, children:

    a. Draw a ring around pictures whose names contain the /i/ sound (three medial i words, two distractors).

    b. Ring the word in a pair that has i in medial position (five pairs).

    c. Trace broken line i's.

    d. Write i under words that have i in their medial position (three medial i words, two distractors).

7. On a worksheet evaluation page, "children ...discriminate among sounds represented by fifteen letters in beginning, ending, and medial positions" by completing the following activities:

    a. Children name, then copy letters.

    b. Teacher dictates six words and asks pupils to write letter that stands for the beginning sound of each word (one i word)

    c. Teacher dictates six words and children write letter that stands for ending sound of each word (no i words).

    d. Teacher dictates six words and children write letter that stands for middle sound they hear in each word (two i words).

8. Letter patterns im, it, in, ig, id are placed on flannel board. Teacher puts consonant letter cards before pattern and asks children to read words. Twenty-two words suggested. Teacher is instructed to use both upper and lower case consonant letters.

9. Using the practice page in their readers (page preceding a set of stories that lists pattern words, sight words, and phrases that will be encountered in the story) children respond to the following:

   a. Teacher asks children to read various words and word groups.

   b. Teacher asks how many different words (from a given set of words) end in _it_? In _im_?

   c. Teacher discusses meanings of words children may not know and deals with multiple meanings. (e.g., multiple meanings of _bit_: "It doesn't hurt a _bit_." "She _bit_ me." "Just a little _bit_, please.")

APPENDIX F

An Abstracted Description of the Short i Exercises in Level B of Merrill.

This appendix contains an abstracted description of the short i exercises contained in Level B of Merrill.

Exercises A. - C. are continuous and are followed by a section of 5 one-page stories that emphasize words using the -it pattern. The procedures in exercises A. - C. are adapted for each new pattern (see D. in outline) and each pattern is similarly followed by a section of 3 to 5 one-page stories.

Workbook pages are assigned after each section of stories. We do not show these as they provide general practice and maintenance of all learned information, rather than focusing on newly-learned information.

A. Teacher introduces new words.[1]

1. Teacher writes on chalkboard the word bit next to the familiar word bat.
    a. Asks students to read the known word; teacher then pronounces and spells the new word.
    b. Asks the students what the difference is between the two words. (Manual notes: "Be sure that pupils see the contrast in the spelling of the two words.")
    c. Uses the new word bit in a sentence, then has the students do the same.
    d. Students say and spell the new word.
2. Teacher follows procedures in A. 1. to present four more words ending in -it "in minimum contrast" with familiar words. (i.e., fit/fat, bit/bat, sit/sat, and it/at)

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[1] All text on pages 103 to 104 is exerpted from the Teacher's Guide for Level B, Dig In, of the Merrill Linguistic Reading Program.

3. Teacher writes the five -it words in another column and adds -s to each of them (e.g., bit/bits)

    a. Teacher says and spells each one.

(Notes: Teacher uses 's for the word it and says "apostrophe" when spelling the word. Manual notes: "offer no explanation unless questioned by pupils.")

4. Pupils practice reading the new words from the board as the teacher points to them in random order.

B. Teacher writes new short i words in sentences on the board for student to read orally.

1. Manual notes: "Work toward normal stress and intonation in all reading."

C. In the students' readers, the children turn to the vocabulary page preceding each section of stories.

1. The short i words from the chalkboard presentation are printed here and the students read and spell them again. Manual notes: "Reading must precede spelling."

2. The -it words are relisted at the bottom of the page in minimum contrast with their -at counterparts.

    a. Students take turns reading the words.

D. Six more lessons are devoted to teaching i in the following patterns: in, ix, id, im, ip, and ig, presented one at a time prior to story reading. In each case the teacher uses the procedures in A. through C. to introduce each of the six additional i patterns.

APPENDIX G

An Abstracted Description of the Ten Short *i* Exercises in Level 3 of Ginn.

This appendix contains an abstracted description of the 10 short *i* exercises contained in Ginn's Level 3. The demarcation of the exercises is indicated by a letter (A. through J.), with the objective of the exercise quoted next to the letter. In Exercise A., the first short *i* exercise, each instructional strategy the teacher uses has been abstracted. In subsequent exercises, only those strategies that are new have been listed, with strategies used in preceding exercises referenced to those exercises.

It is important to point out that the 10 short *i* exercises do not occur one after the other. Instead, they are taught across five lessons so that they are interspersed with five stories and other activities. The 10 exercises are sequenced in the Teacher's Manual as follows:

Exercises A. and B. after Story 1;
Exercises C. after Story 2;
Exercises D., E., and F. after Story 3;
Exercises G. and H. after Story 4;
Exercises I. and J. after Story 5.

While we attempted to abstract the material in the Teacher's Manual as much as possible, we were concerned that the language of the lesson be apparent to the reader, as that language will be an important part of our discussion concerning the quality of the instruction.

Following are the descriptions of the 10 Ginn short *i* exercises:

A. "The pupil will identify words containing the unglided (short) vowel sound as in hill. (Introductory Activity)."[1]

1. Teacher shows picture of a fish and a witch and has children name them.
    a. Teacher asks children to "listen for the vowel sound in the middle of fish and witch."
2. Above procedure repeated with crib. (e.g., Children see picture, name corresponding word; teacher asks children if "they can hear the same vowel sound in the middle of crib that they hear in middle of fish and witch.")
    a. Manual notes: "Confirm, by having all three words repeated in unison."
3. Above words (fish, crib, witch) listed on board and read. Teacher underlines i in fish.
    a. Manual notes: "Help children understand that this (underlined letter) is a symbol for the vowel sound heard in the word fish."
    b. Volunteers "underline the same letter in the other words" (crib and witch).
    c. The three words are read.
4. Teacher says nine pairs of words (e.g., sit/sat, hop/hit). Children repeat the word from each pair that "contains the same vowel sound that is heard in fish."
    a. Manual notes: "Because some children may have difficulty identifying medial vowel sounds it may be helpful to read quite deliberately."
5. Teacher writes word Bill (known sight word) on board.
    a. Manual notes: "Help children locate the vowel sound in middle of...Bill, by sweeping your hand from left to right below the word as you read it," and to "call attention to the middle position of the vowel letter i."
6. Teacher says is (known sight word) and asks children if they can hear the "same vowel sound as in Bill at the beginning of word is."
    a. Teacher writes is on board.
    b. Manual notes: "Adopt the procedure described above (A. 5. a.) for establishing the initial position of the correspondence."

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[1]All the text on pages 106 to 110 is exerpted from the Teacher's Guide for Book 2 of the Ginn Reading Program.

7. Teacher says nine words (three begin with i, six contain medial i). Children are asked to determine the position of the vowel.

8. On worksheet children write letter i next to pictures whose names "contain the same vowel sound as in fish."

    a. Manual notes: "Refer to the vowel sound in the word fish as an unglided vowel sound. The children may make this term part of their speaking vocabulary."

B. "The pupil will identify words containing the unglided (short) vowel sound as in hill. (Practice 1)."

This lesson uses the same instructional strategies described in A. and the following new activity:

1. Manual notes: "For further practice in recognizing words containing unglided vowel sound as in hill prepare a word box."

    a. A word box contains objects whose names contain the /i/ sound as in hill (e.g., "a baby's bib, a lid to a pan, a paper clip"). These objects are placed in a box. Pupils select an object and name it.

    b. Manual notes: "If the pupil is familiar enough with the word, ask the pupil to write it on the chalkboard and circle the letter that represents the vowel sound. Lead to conclude that the words on the chalkboard have the unglided vowel sound as in hill."

C. "The pupil will decode words containing the graphemic base id. (Introductory Activity)."

1. Teacher writes hid on board.

    a. Volunteer reads the word.

    b. Manual notes: "If help is needed, point to letter i and say, 'It stands for the same vowel sound that is heard in fish.'"

2. Teacher writes did, lid, bid and kid in vertical column under hid.

    a. Teacher asks children "if they can see anything about the words that is the same."

    b. Teacher draws a vertical line separating id from beginning consonants, "when the word part id is noticed."

    c. Manual notes: "Help children understand that knowing the graphemic base id can help them read these words."

3. Teacher sketches stick figure on board and writes name Sid beside it. Word Sid is read.

    a. Teacher writes four sentences about Sid on board (e.g., "Sid hid at the zoo.").

    b. Teacher "helps" children read sentences.

4. Children complete sentences on worksheet by choosing the correct word from two -id words.

D. "The pupil will decode words with the graphemic base it. (Introductory Activity)."

This lesson uses the same strategies described in C. for id.

E. "The pupil will decode words containing the two graphemic bases id and it. (Practice 1)."

1. Teacher writes bit and sit on board.

    a. Volunteer reads words and underlines the graphemic base it.

2. Above procedure repeated for did and hid.

3. Teacher writes fit, hit, pit, kid, bid, lid in two columns.

    a. Volunteers underline the graphemic base in each list.

4. Teacher writes six id words and four it words on board and reads story that contains these words. (Children are told that the story contains a number of words the end with id or it.)

    a. Manual notes: "Reread story slowly, pausing at each italicized word (id, it words) to allow volunteers to locate and read the words on the board..."

5. Additional activity suggested is to:

    a. "Suspend a lid inside a large open carton with the open side facing the player...Each child is given three pingpong balls and throws them at the lid. If the ball strikes the lid, the player scores a point."

    b. "Using the words listed on board (in E. 4.), each child who can find and read an -it and an -id word (e.g., bit/did) should be allowed to hit the lid."

F. "The pupil will identify words containing the unglided vowel sound as in hill. (Practice 2)."

This lesson uses those strategies described in A. and B., and the following new activities:

1. Teacher tells children a story, asks them questions about the story. with the direction that the words they use to answer the questions should "contain the unglided vowel sound heard in this."
    a. Teacher reads: "One night a boy and girl went out exploring. Was the boy's name Dick Smith or John Jones? Was the girl's name Mary Jones or Cindy Smith?"
    b. Activity continues as above with four other questions.

G. "The pupils will decode words containing the graphemic base im. (Introductory Activity)."

This lesson uses strategies from C. and E. and the following new activity:

1. Teacher places graphemic base card im in card holder. Children select one consonant letter card from five cards (d, h, j, k, or t) and place it in front of the im and read the resulting word.

H. "The pupil will identify words containing the unglided short vowel sound as in hill. (Practice 3)."

This lesson uses strategies from A. and B.

I. "Phonemic analysis: The pupil will decode words with the CVC pattern and unglided vowel sound as in did. (Introductory Activity)."

1. Teacher writes sit on board. Word is read.
    a. Volunteer is asked to "name the vowel letter in sit."
    b. Manual notes: "Write a V above i in sit and explain that V stands for vowel."

c. Follow a similar procedure with consonants in sit, completing the pattern CVC above the word sit.

d. Teacher writes fit, pit, lit, below sit. Words are read.

2. Teacher writes did on board.

a. Same procedure described above (in I. 1.) is followed.

3. Same procedure is followed for him (as described above in I. 1.).

4. Teacher draws vertical lines between the first consonant and between the vowel and last consonant for words in each of three lists. Children read the lists of words.

a. Manual notes: "Establish...that each word contains the unglided vowel sound represented by letter i."

b. "Refer to the CVC pattern and explain that ... when the vowel letter i is between two consonant letters, the corresponding vowel sound is usually unglided."

J. "The pupil will identify the CVC pattern with i as in did. (Practice 1.)."

This lesson uses strategies from G. and I.

APPENDIX H

An Abstracted Description of the Short e Exercises in Levels B and F of Houghton Mifflin

This appendix contains an abstracted description of the short e exercises contained in Houghton Mifflin Levels B and F.

In a single lesson in Level B Houghton Mifflin teaches the short e correspondence as a part of the phonogram et (described in A. below). Then in Level F, the sound of the short e in isolation is dealt with. The exercises described in B. through D. below do not occur one after another. Rather, interspersed among them are story reading and other activities.

It is important to remember that the A. exercises below take place in the beginning of first grade, and the remainder take place four levels later in Level F, the last level in first grade.

A. "Given the common phonogram et, the pupil associates that phonogram with the sounds that that letter group usually stands for."[1]

1. Teacher prints the word wet on the board and tells students they "know the sounds that w and t stand for."

    a. Teacher says, "I am going to say something and leave out this word at the end. When I stop, think of a word that begins with the sound w stands for and ends with the sound t stands for, and makes sense with what I said. Listen: The rain made the field too____. What is the word?"

    b. When correct answer is given, teacher asks, "How did you know it wasn't soft?...(wrong sounds) How did you know it wasn't wait?... (no sense)."

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[1]All the text on pages 111 to 113 is exerpted from the Teacher's Guide for Rockets and Cloverleaf of the Houghton Mifflin Reading Series.

2. Beneath the word wet teacher writes get, a word taught previously as a sight word.

    a. Asks students to note the letters that are the same in the two words.

    b. Teacher and students say the two words aloud, "listening for the sounds of et."

3. Teacher prints et on the board and tells the students that these letters usually stand for the sounds that come after g in get and w in wet.

4. Teacher prints five sentences on the board using the words pet, jet, let, net, and yet.

    a. Students read the sentences silently first.

    b. Teacher has individuals read each sentence aloud and identify the et words.

B. "Given a list of known words, the pupil is able to identify those in which he or she can hear the so-called short e sound."

1. Teacher prints letter e on chalkboard, reminding the students that they have already learned one sound (long e) for it.

    a. Teacher prints be and me and asks the students what the sound of the e in these words is called (long e). Repeats with she and green. Reminds them that this sound (long e) can be easily remembered because it says its letter-name.

2. Prints let, tell, west, and bed on the board, telling the students they will learn a new sound for e.

    a. The four words are already known to the students. Teacher asks them to "say the words to themselves, listening for the sound the vowel e stands for in each."

    b. Teacher tells students that the vowel sound in the words is called the "short e sound."

    c. Manual directs: "Pronounce the short e sound in isolation. Then have pupils say it together with you." (Isolating sounds is only done with the vowel sounds)

    d. Repeats B. 2. a.

3. Teacher points to each of 12 familiar words. Students read the word and tell whether or not the vowel is short e.

4. Workbook practice "to provide practice in listening for and recognizing the short e sound."

a. Children read printed directions instructing them to a) read silently four words printed in each of four boxes; b) listen for the short e in each word; c) circle those pictures surrounding each word whose names have the short e sound (i.e., the word best is printed in box 1, surrounded by pictures of a sled, bee, cheese, and pencil. The students circle sled and pencil.

b. Given nine printed words, (5 with long e; 4 with short e) students mark those with short e.

C. "Reteaching Basic Reading Skills"

1. Teacher repeats procedure suggested in B. for students who need further practice.

D. Students read in their readers a two-page "article" about the long and short e sounds.

1. Teacher asks students to read the first few sentences silently. These inform the student that e can stand for many sounds as in bed, be, her, and bear.

   a. Teacher questions passage then selects a student to read it aloud.

2. Students are directed to read silently the next section which discusses the long e sound as in these, she, feel.

   a. Same procedure as D. 1. a.

3. Lesson continues with several other segments of text concerning aspects of the e vowel read silently and then discussed.

APPENDIX I

An Abstracted Description of the Sequence for Teaching Short e in Level 3 of Bank Street

This appendix contains an abstracted description of the short e exercises as they are taught in Level 3 of Bank Street. Each exercise (i.e., all the procedures described in A. below are one exercise, all those in B. constitute another, and so forth) is in a separate lesson. From the time short e is introduced, there is an exercise pertaining to it in each consecutive lesson for 12 lessons. All skills exercises, including those described here, follow story reading in the lesson; there is one story in each lesson. Therefore, while the exercises dealing with short e are listed in the order of their appearance, each is separated by one story and several other exercises that include Vocabulary Development, Comprehension questions, language-structure analysis, and study skills.

A. "Auditory discrimination: short vowel e"[1]

1. Teacher tells students to listen for the sound of et as she says some words. First, says et, then the word get. Repeats with met, bet, and wet.
2. Teacher says pairs of words (e.g., bet/bit, pat/pet) and the students raise their hands when they hear et.
3. Teacher tells students, "The sound et begins with a very short sound."
    a. Teacher says et, emphasizing the vowel sound and has the children repeat it.
    b. Teacher tells students to "listen for that same short sound" in a new list of words. Teacher says egg. Asks "does egg have the same short sound we hear in et?" (Continue procedure with red, pet, Ben, beg, wet, men, bed, Ken)

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[1]All the text on pages 114 to 117 is exerpted from the Teacher's Guide for Level 3, Around the City, of the Bank Street Readers.

4. Teacher reads pairs of words (e.g., bag/bug, wall/well) telling students to raise their hands when they hear the "same short sound they heard at the beginning of et."

B. "Auditory discrimination: short vowel e"

1. Teacher writes get on board, underlines the e and says "This is the short vowel sound of get."

    a. Teacher reads a list of words with various short medial vowels. Students raise their hands when they hear short e and teacher and students repeat that word.

2. Teacher tells students to think of words that have the short e sound that will answer her questions. (e.g., "I'm thinking of a word that is the opposite of dry." wet)

C. "Auditory-visual association: short vowel e."

1. Teacher writes get on board, reminds students of its short vowel sound, and has one underline the "short vowel sound in get."

2. Repeats procedure in B. 2. using only words in the students' reading vocabulary (i.e., learned as whole words) because the words are written on the board (wet, red, Ben, Ken, bed).

3. Next to get, teacher writes red, man, wet, and Ben.

    a. Calls on individuals to read the words and to underline those "that have the short vowel sound that is heard in get."

4. Repeats procedure in C. 3. a. with new list of words.

D. "Auditory-visual association: short vowels e, i."

1. Teacher writes it and get on board and underlines the i and e.

    a. Teacher reads words with short i and e and lists them in the appropriate column as the students determine whether they have the vowel sound heard in it or the vowel sound heard in get.

E. "Short vowels a, e"

1. Same procedure as in D. 1. a. using at and get.

F. "Short vowels i, e"

1. Teacher reads two-line rhymes with the final word missing--the final word having a short i or e.
    a. Students supply final word. (e.g., "I'll yell and yell/If you don't tell).

C. "Auditory-visual association: short vowels a, e, i."

1. Teacher reviews words with short a, e, and i by asking students to listen as she reads a pair of words, and determine which word of the pair has the same sound as in at; as in get; and as in it.

H. "Auditory-visual association: short vowels a, e"

1. Same procedure as in D.

I. "Auditory-visual association: short vowels a, e"

1. Same procedures as in F. 1. a.

J. "Auditory-visual association: short vowels a, e, i"

1. Writes at, get, and it on board and has them read.
2. Writes a list of CVCs on the board with the medial vowel missing (e.g., b_g, s_t).
    a. Teacher says a word (e.g., bag) and students choose from a set of a, e, i letter cards that will correctly complete the word on the board.

K. "Auditory-visual association: short vowel a, e, i"

1. Teacher draws a fish bowl with fish, each bearing a short a, e, or i word.

    a. Teacher says a short vowel word and tells students to "Go-fishing for a fish that has the same vowel sound that you hear in the word."

L. "Auditory-visual association: short vowels a, e, i."

1. Teacher reads a list of short a, e, and i words. Students select the short vowel from a set of a, e, and i letter cards that match the vowel heard in each word.

APPENDIX J

An Abstracted Description of the Sequence for Teaching Short e in Book 1, Part 2 of Open Highways

This appendix contains an abstracted description of the short e, long e digraphs and "r-controlled" e sequence as it is taught in Book 1, Part 2 of Open Highways. Exercises A. through E. below are a continuous sequence in the Teacher's Guide. They are followed by one section of story-reading and other activities in which there are no e exercises. Exercises F. through I. like those in A. through E. are unbroken by other activities.

A. "Identify given words containing a short vowel sound by using phonic cues (visual clues to short vowel sounds)."

1. Teacher writes four words with short e (met, bed, nest, set) in one column and four words with long e (eat, jeep, sheep, leaf) in another.
    a. Teacher asks students to identify the first word (met) and tell how many vowel letters are in it, and what the name of the letter is.
    b. Teacher says, "The letter e often stands for the vowel sound you hear in the word met."
        (1) Teacher directs students to say met and "listen to the vowel sound."
    c. Teacher reads each of the remaining short e words, asking if the students hear the same vowel sound as in met.
        (1) Teacher asks student to read each word twice more and listen for the vowel sound.
    d. Teacher points to eat and asks what the word is and what two vowels it begins with.
        (1) Teacher tells students, "the letters ea often stand for the vowel sound you hear at the beginning of the word eat."

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[1]All text on pages 118 to 122 is exerpted from the Teacher's Guide for Book 1, Part 2, Rolling Along, of the New Open Highways Reading Program.

e. Teacher repeats procedures in A. 1. d. with jeep, pointing out that the vowel sounds in jeep and eat are the same.

f. Teacher repeats procedures in A. 1. c. for the words in the second column.

2. Teacher writes red above the first column. Asks how many vowel letters are in red, what the vowel is, what letter follows the vowel, and whether that letter is a vowel or consonant.

a. Teacher repeats above procedure with the remaining short e words.

b. Teacher points out that in short e words, the vowel is followed by one or more consonants.

c. Teacher tells students that all the words in this column have the same vowel sound called the "short vowel sound of e."

3. Teacher writes keep above the second column, asking how many vowel letters are in the word and what they are.

a. Continues above procedure with remaining long e words.

b. Points out that in each case, the e is followed by a vowel letter.

c. Tells students that the vowel sound in the words in this column is called the "long vowel sound of e."

4. Teacher points to the words of the first column saying, "If you see the vowel letter e in a word followed by one or more consonant letters, you will first try the vowel sound that you hear in red, the short sound of e."

5. Teacher points to second column saying, "If you see the vowel letters ee or ea in a word, you will try the vowel sound that you hear in keep, the long sound of e."

B. In the workbook, children determine which of eight words have the same vowel sound as in red. Then which of eight words have the same vowel sound as in keep. (Above each printed word is a picture of that word.)

(Note: Teacher leads students through the initial identification of the two target words (red, keep) and is instructed to make sure they can identify all the pictures before completing the page independently.)

C. Teacher repeats procedures in A. with individuals who require extra practice.

D. In the workbook, students sort 12 words (6 with short e and 6 long e) under key words (red, keep).

1. Teacher has volunteer read the first word (shelf) and asks him/her to give a reason for using the vowel sound heard in red when he/she reads shelf rather than the vowel sound heard in keep.
    a. Teacher reminds students of the rule for short e (A. 4.).
    b. Teacher repeats above procedure for the next word (sheep).
    c. Students write all short e words from the 12 in a column under red and all long e words from the 12 in a column under keep.
2. Teacher follows procedures in D. 1. a./D. 1. b. with individuals who require extra practice.

E. Children identify words containing short e and r-controlled e.

1. Teacher writes five short e words (e.g., bed, cent) and five -er words (e.g., her, perch) on the board.
    a. After volunteer reads short e words and it is established that they each have the same vowel sound, teacher asks why the words have the same vowel sound, eliciting the response that the e in target list is always followed by one or more consonant.
    b. Teacher points to first -er word (her) and reads the word.
        (1) Teacher tells students that e can also have the vowel sound heard in her.
        (2) Teacher tells students to say her and listen for the vowel sound.
        (3) Teacher points to next -er word (perch) and asks what the word is (Manual notes: "Read the word yourself if necessary.") and questions the students as to whether they hear the same vowel sound as in her.
        (4) Teacher proceeds as in (3) above for the remaining -er words.
        (5) Teacher has entire -er list read, attempting to establish the notion that the vowel sound in each is the same.
2. Teacher tells students that e can stand for sound in bed or the sound in her.
    a. Teacher calls attention to the fact that r is a consonant letter, yet the e before it does not have the same sound as in bed.
    b. Teacher says, "The vowel sound you hear in these words is the r-controlled sound of e."

F. Children practice identifying long, short, and r-controlled e words on a practice page in their readers.

1. Eight pictures are listed next to their printed labels; four short and four long e words.

    a. Teacher points to first picture and word and asks what it is (leg) and, after receiving a response, how students know to try the short sound of e. (i.e., the e is followed by a consonant but not an r, giving it a short sound). Teacher continues for the remaining short e words.

    b. Teacher proceeds as in F. 1. above for the four long e words, eliciting the rule for long e sounds. (i.e., the e in these words is followed by e or a giving it a long sound.)

2. Four more picture and word pairs are listed, two with short e, two with r-controlled e.

    a. Teacher uses procedures in F. 1. to read these four words, reminding students each time of the rules that change the vowel sound of e.

3. Children complete sentences with words listed next to them "using phonics and context cues."

G. Teacher repeats procedures in E. with individuals who require extra practice.

H. In workbook students sort words into those that have same vowel sound as in red and those that have vowel sound in her.

I. Teacher repeats procedures in F. with individuals who require extra practice.

J. "Extracting meaning from given content by using context and phonic cues."

1. Teacher writes key words red, keep, and her on board.

    a. Teacher writes "I have an old sled" on board and has volunteer read it.

        (1) Asks how volunteer knew which vowel sound to use for sled (i.e., asks for rule).

        (2) Points to each key word and asks which has the same vowel sound as sled. Writes sled under red.

b. Continues in same manner using six sentences in all, containing words with examples of each of the three vowel sounds in the key words.

K. In the workbook, children are presented with three sentences containing two underlined words each. (Words have long, short, or r-controlled e.)

1. Students list the words from the sentence below the key words red, keep, and her, having matched the vowel sound.

L. Teacher follows procedures selected from above with individuals who require extra practice.

TABLE 1

Titles and Publishing Information for The Eight Programs Selected for Analysis

Program Title	Publisher	Date of Program Edition Used in Study	Program's Abbreviated Label Used in Text
Reading 720	Ginn and Co.	1976	Ginn
The Houghton Mifflin Reading Series	Houghton Mifflin Company	1976	Houghton Mifflin
The New Open Highways	Scott, Foresman and Company	1974	Open Highways
The Bank Street Readers	Prepared by the Bank Street College of Education, published by Macmillan Publishing Co., Inc.	1973	Bank Street
The Merrill Linguistic Reading Program	Charles E. Merrill Publishing Co.	1975	Merrill
The Palo Alto Reading Program: Sequential Steps in Reading	Harcourt Brace Jovanovitch, Inc.	1973	Palo Alto
Programmed Reading: A Sullivan Associates Program	McGraw-Hill Book Company	1973	Sullivan
Distar Reading I & II: An Instructional System	Science Research Associates, Inc.	1974	Distar

TABLE 2

Number of Graphemic Units Explicitly Taught
By Each of the Eight Programs
Through Second Grade

Sullivan	135
Houghton Mifflin	111
Bank Street	98
Palo Alto	94
Merrill	93
Ginn	88
Distar	76
Open Highways	65

TABLE 3

Number of Programs Teaching Each Graphemic Unit
Through Second Grade

SHORT VOWELS		
a	man	8
e	get	8
i	sit	8
o	cot	8
u	cup	8

LONG VOWELS		
a–e	made	8
i–e	nice	8
o–e	hope	7
u–e	tune	7
e	be	6
o	most	6
e–e	these	4
u	truth	3
i	icicle	2
a	apron	2
u	united	2

VOWEL DIGRAPHS & DIPHTHONGS		
ee	seem	8
ay	say	7
ea	seat	7
oo	book	6
ai	rain	6
ou	out	5
oo	moon	5
ow	snow	5
oa	boat	5
aw	saw	4
ow	cow	3
oy	boy	3
ew	few	2
ue	glue	2
oi	point	2
ie	pie	2
oe	doe	1
au	pause	1
ou	you	1
ou	country	1
ou	would	1
ou	brought	1
ea	head	1

R & L CONTROLLED VOWELS		
all	ball	8
ar	car	7
er	her	7
or	corn	5
ur	fur	5
ir	girl	5
or	work	3
ore	more	2
are	bare	1
oor	door	1
ure	cure	1
our	pour	1
ear	earn	1

SINGLE CONSONANTS		
b	bat	8
l	lap	8
r	ran	8
h	hat	8
j	jam	8
c	cat	8
f	fan	8
y	yard	8
n	not	8
d	did	8
qu	quite	8
t	tap	8
v	van	8
m	man	8
s	sit	8
w	wag	8
p	pat	8
z	zip	8
g	gun	8
k	kiss	8
x	six	8
s	his	6
c	city	5
g	giant	5
s	sugar	2

DOUBLE CONSONANTS		
ll	bell	6
ff	stiff	6
tt	kitten	6
ss	miss	5
gg	egg	5
pp	ripped	5
dd	add	4
nn	Ann	4
zz	buzz	3
mm	humming	3
bb	rubbed	2

INITIAL CONSONANT CLUSTERS		
sl	slap	8
br	bring	8
st	stand	7
tr	track	7
bl	black	7
fl	flap	7
cr	cry	7
sw	swim	6
wh	wheel	6
fr	fry	6
sma	small	6
cl	clap	6
dr	drop	6
pl	plan	5
gr	grass	5
sk	skate	5
gl	glad	5
sn	snap	5
sp	spill	5
tw	twin	4
pr	print	4
str	string	4
sc	scab	3
scr	scratch	2
spl	splash	2
spr	spring	2
thr	three	1
squ	squeak	1

FINAL CONSONANT CLUSTERS		
st	fast	7
nd	and	5
ng	rang	5
nk	pink	5
nt	bent	4
sk	mask	4
tch	patch	4
mp	camp	3
ld	held	3
lp	help	3
lk	milk	3
lt	melt	3
ft	left	3
pt	kept	3
sp	crisp	2
ct	act	2
xt	next	2
lf	self	2
nch	lunch	1

INITIAL CONSONANT DIGRAPHS		
sh	ship	8
ch	chin	8
th	thank	7
th	that	6
kn	knock	4
wh	who	1
ch	Christmas	1
ph	phone	1
wr	write	1

FINAL CONSONANT DIGRAPHS		
ck	back	8
ch	peach	7
sh	fish	7
th	path	6

VOWEL VARIENTS		
e	live	2
o	do	1
o	mother	1
u	pull	1
o	soft	1
o	move	1
a	water	1

OTHER		
y	cry	6
y	penny	4
igh	night	3
mb	lamb	2
ture	nature	2
tion	nation	1
sion	mission	1
ion	million	1
t	whistle	1
w	answer	1
el	nickel	1
le	apple	1
ig	sign	1
alk	walk	1
dge	fudge	1

TABLE 4

The First 15 Letter/Sound Correspondences Presented in Each Program and Words That Can Be Generated from Their Combination

	DISTAR	SULLIVAN	PALO ALTO	MERRILL	GINN	HOUGHTON MIFFLIN	BANK STREET	OPEN HIGHWAYS
CORRE-SPONDENCES	1. a and 2. m* mat 3. mm humming 4. s* sat 5. ss miss 6. e be 7. ee* see 8. ea seat 9. e e these 10. r ran 11. d dad 12. dd add 13. f* fan 14. ff sniff 15. i pin	1. a and 2. m* mat 3. n nest 4. t tan 5. p pan 6. f* fan 7. i pin 8. th* thin 9. c cat 10. s* sat 11. th* this 12. b bat 13. ng sing 14. tt sitting 15. pp napping	1. a and 2. m* mat 3. r ran 4. t tan 5. s* sat 6. n nest 7. l lot 8. f* fan 9. b bat 10. o* not 11. h had 12. g get 13. v* van 14. d dad 15. i pin	1. c cat 2. a and 3. t tan 4. f* fan 5. n nest 6. p pan 7. m* mat 8. s* sat 9. h had 10. b bat 11. r ran 12. d dad 13. v* van 14. l lot 15. j jump	1. b bat 2. l lot 3. r ran 4. h had 5. j jump 6. c cat 7. f* fan 8. y yarn 9. n nest 10. d dad 11. g get 12. t tan 13. v* van 14. m* mat 15. s* sat	1. f* fan 2. d dad 3. m* mat 4. g get 5. b bat 6. s* sat 7. t tan 8. w wet 9. n nest 10. p pan 11. c cat 12. k* kite 13. j jump 14. d dad 15. h had	1. h had 2. m* mat 3. g get 4. b bat 5. r ran 6. s* sat 7. f* fan 8. it sit 9. l lot 10. d dad 11. w wet 12. ill will 13. i pin 14. c cat 15. t tan	1. h had 2. m* mat 3. d dad 4. g get 5. b bat 6. f* fan 7. l lot 8. p pan 9. s* sat 10. t tan 11. k* kite 12. th* thin 13. c cat 14. n nest 15. j jump
WORDS	add, am, as, dad, dam, dead, dream, fad, fee, feed, free, if, is, mad, mass, me, miff, miss, ram, reed, sad, sam, sass, seam, sea, see, seed + plurals and possessives	am, an, ant, as, ban, bat, batting, bath, bib, bin, bit, can, cat, fan, fast, fat, fit, fitting, in, is, it, its, man, map, mat, math, mint, nan, nap, napping, nip, pan, pant, pat, path, patting, pin, sam, sat, sin, sing, sit, sitting, tab, tam, tan, that, thin, this, tim, tin + plurals and possessives	am, an, and, as, at, bad, bag, ban, bat, bib, bid, big, bin, bit, bog, dad, dam, dan, dig, dog, don, fad, fan, fast, fat, fig, fit, fog, gab, gag, gas, grab, god, got, grit, had, ham, has, hat, hid, him, his, hit, hog, hot, lab, lad, lag, last, lid, lift, list, lit, log, lost, lot, mad, man, mat, mist, mob, mom, nag, nan, nod, not, rag, ram, ran, rat, rib, rid, rig, rim, rob, rod, ron, rot, sad, sag, sam, sat, sift, sin, sit, slit, tab, tag, tam, tan, tim, tin, tom, tot, van, vat + plurals and possessives	am, an, and, as, at, bad, ban, bat, can, cap, cat, dad, dan, fad, fan, fast, fat, had, ham, has, hat, jab, jam, lab, lad, lap, last, mad, man, map, mat, nap, Nat, pan, pat, ram, ran, rat, sad, sam, sat, tap, van, vat + plurals and possessives	NO WORDS POSSIBLE	NO WORDS POSSIBLE	bib, bid, big, bill, bit, did, dig, dill, dim, fib, fig, fill, fit, gill, grit, hid, hill, him, his, hit, lid, lift, list, lit, mill, rib, rid, rig, rim, sift, sill, sit, slit, till, tim, wig, will, wim + plurals and possessives	NO WORDS POSSIBLE

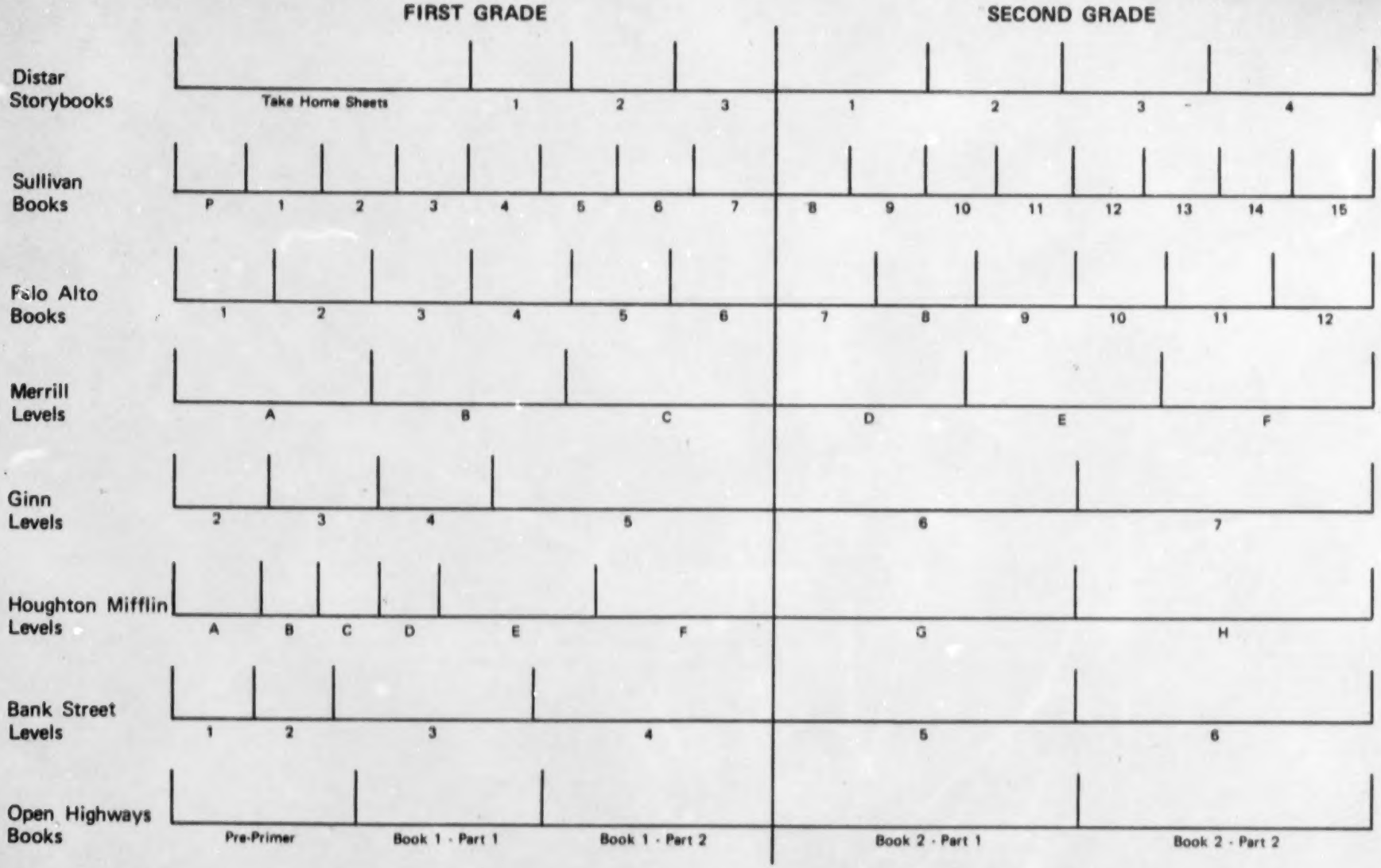

Figure 1. The relationships among program content units and the first two school grades.

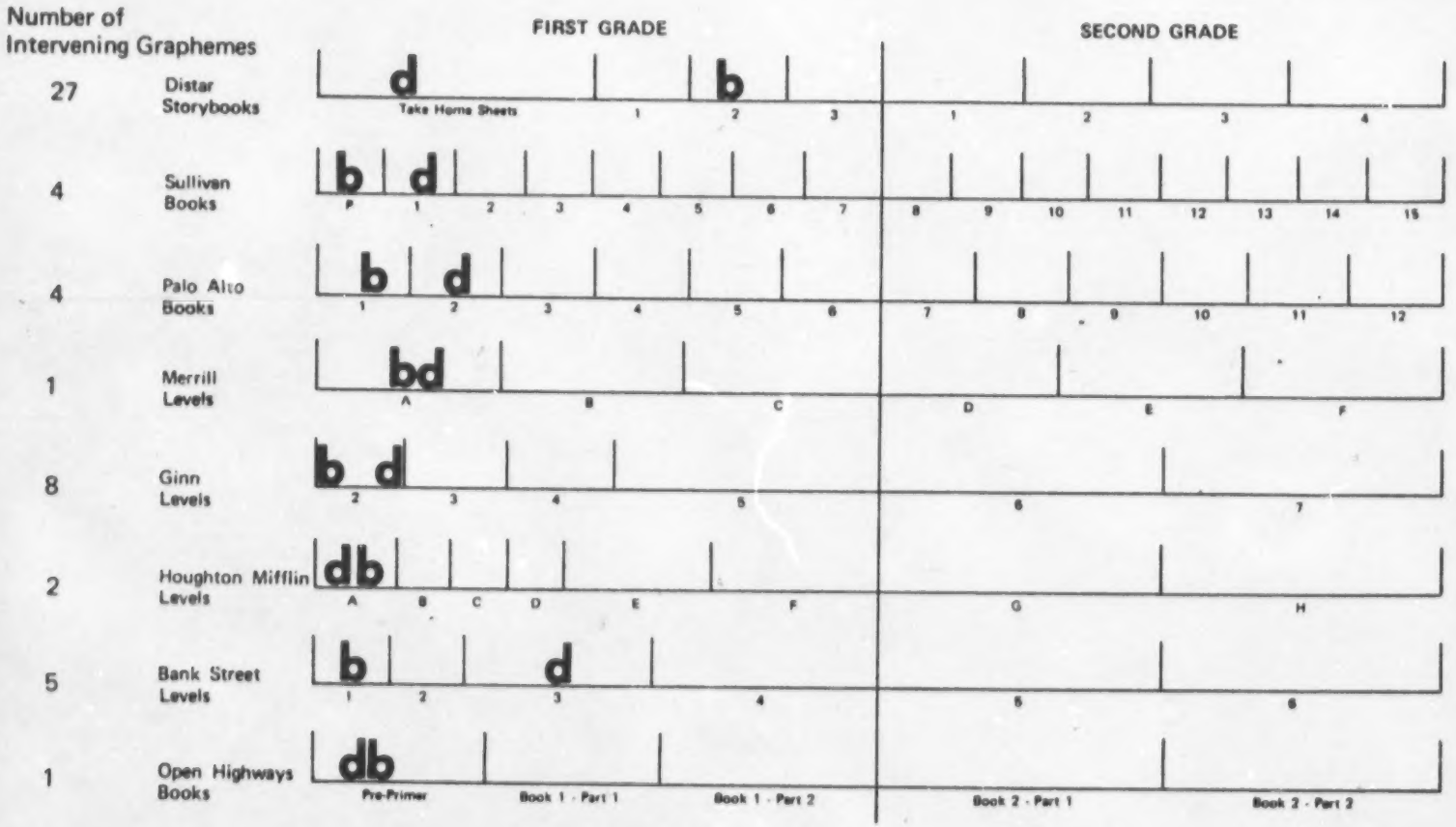

Figure 2. Distance between b–d or d–b placement for each program.

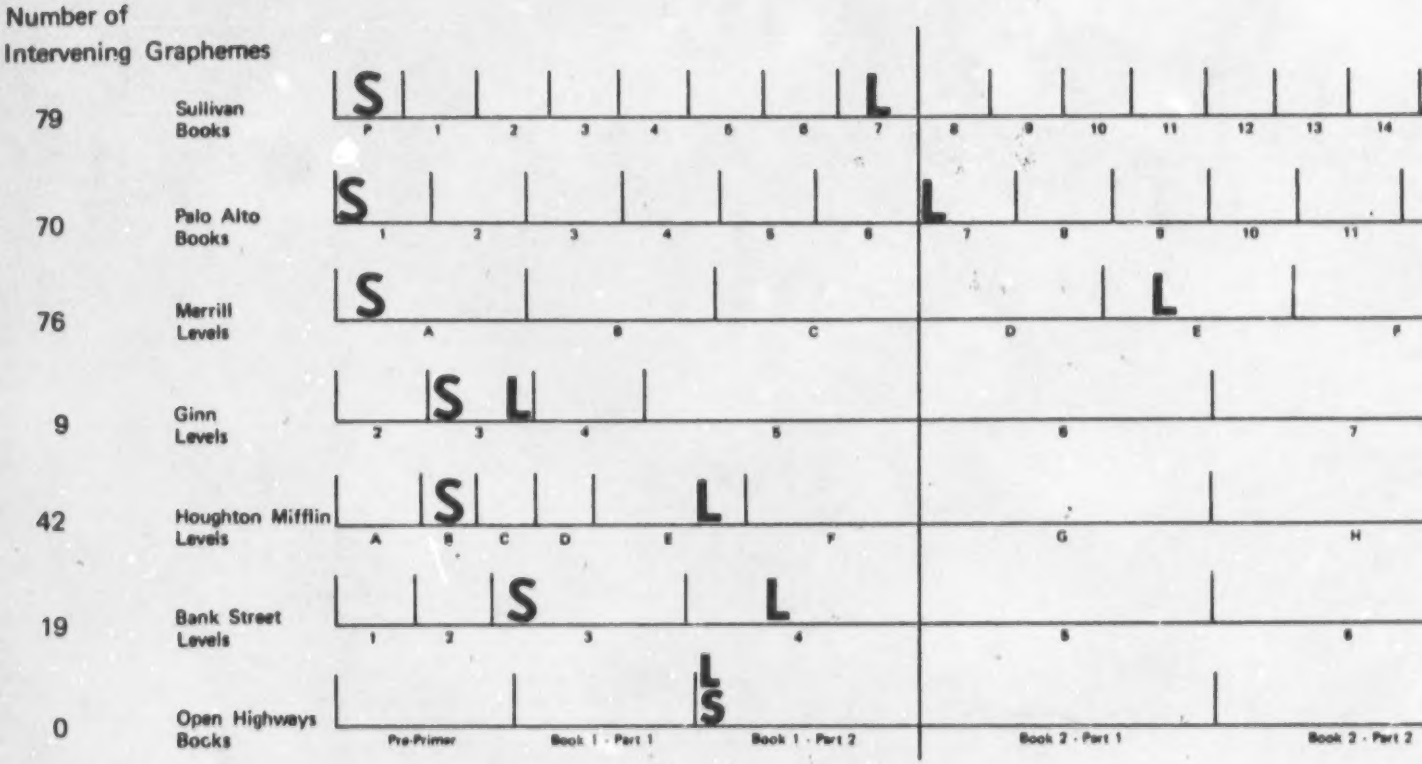

Figure 3. Distances between first short sound and first long sound of the same vowel grapheme for each program.

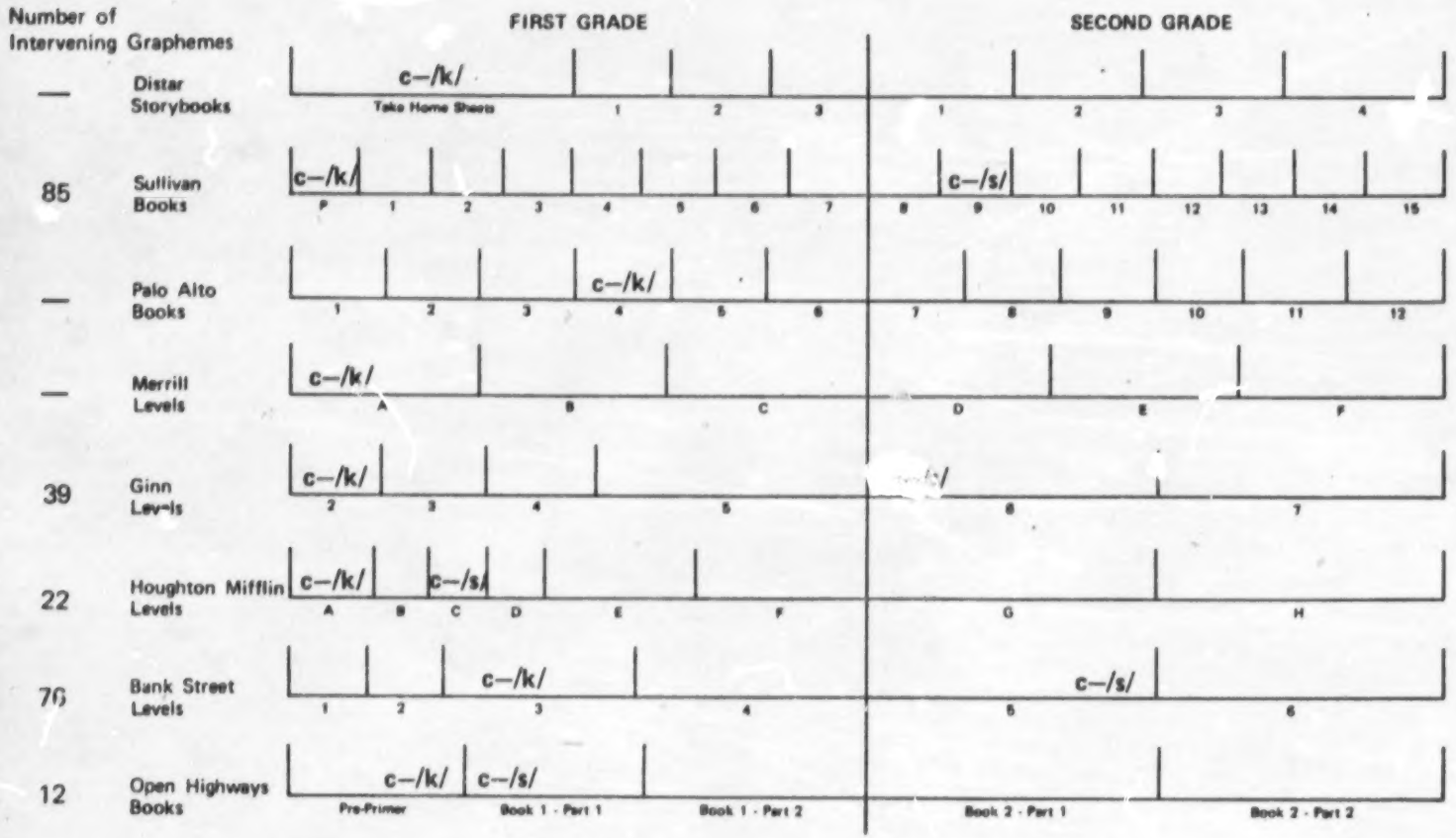

Figure 4. Distance between c – /k/ and c – /s/ placement for each program.

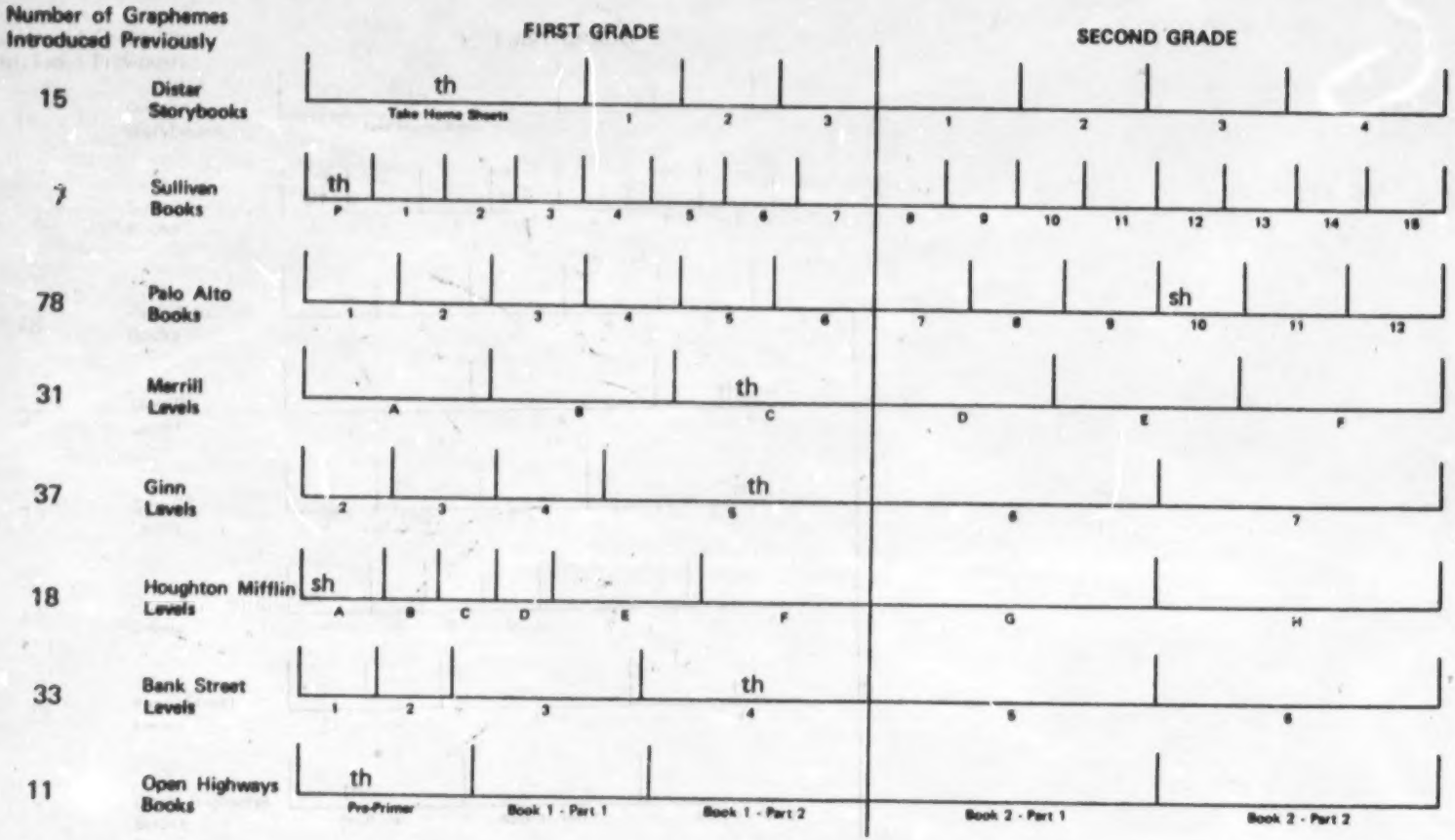

Figure 5. Location of a first consonant digraph in each program where the letters combine to produce a "new" sound.